

A REVISION OF *DIASCIA* SECTION *RACEMOSAE*

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ABSTRACT

The two sections of *Diascia* (Scrophulariaceae—Hemimerideae) are re-defined attaching importance to the position of the two translucent yellow "windows", which, in sect. *Diascia*, are on the lateral lobes at the mouths of the pouches or spurs, while in sect. *Racemosae* they are on the two upper lobes. A key is given to the 26 species in sect. *Racemosae* and they are fully described; most of them are also illustrated. The affinities of the genus, its distribution, the inter-relationships of the species in sect. *Racemosae* and their floral biology are briefly discussed. An appendix deals with *Alonsoa peduncularis*, the one South African species of this American genus.

UITTREKSEL

'N HERSIENING VAN *DIASCIA* SEKSIE *RACEMOSAE*

Die twee seksies *Diascia* (Scrophulariaceae—Hemimerideae) word herdefinieer in terme van die plasing van die twee deursigtige geel "vensters" wat in die seksie *Diascia* op die laterale lobbe by die opening van die sakkies of spore is terwyl by die seksie *Racemosae* hulle op die twee boonste lobbe is. 'n Sleutel word vir die 26 soorte in seksie *Racemosae* gegee en hulle word ten volle beskryf; die meeste word ook geïllustreer. Die affiniteite van die genus, sy verspreiding en die verwantskappe van die spesies in die seksie *Racemosae* en hulle floristiese biologie word kortliks bespreek. In 'n bylaag word *Alonsoa peduncularis*, die enigste Suid-Afrikaanse spesies van hierdie Amerikaanse genus, behandel.

Key words: *Diascia* sect. *Racemosae*, Scrophulariaceae, *Alonsoa*, floral biology, pollen biology.

INTRODUCTION

Diascia is one of the genera of South African Scrophulariaceae (*Zaluzianskya* and *Manulea* are others) that have mostly perennial species in the eastern region, annual ones in the Cape; but there are other differences to be considered than that of habit alone. We are primarily concerned here

with a revision of the eastern perennial species, but the taxonomic subdivision of the genus forces us to include a group of Cape annuals as well.

Many species of *Diascia* have corollas with two spurs, and although full generic descriptions (Wettstein, 1894; Hiern, 1904; Dyer, 1975) rightly refer to pits, pouches or spurs, the spurs have attracted most attention. J. D. Hooker wrote (1871) "The pretty Cape genus *Diascia*, which, like *Satyrion* among Cape orchids, is remarkable for its two spurs". Chittenden (1951) gives the derivation of the name as "*di*, two, *askos*, sac, referring to the two spurs". In fact, spurred species were not known when the genus received its name, which refers to the two sacs or pouches found in the original species, *D. bergiana*. The spurs have diverted attention from the two translucent yellow patches that mark the position of the pouches in *D. bergiana*. These patches are entirely ignored in the generic descriptions quoted above, though they are mentioned in a few of Hiern's specific descriptions. We here refer to these patches as windows, because of their translucence.

Nearly all the Cape annuals have two lateral windows closely associated with the openings to the pouches or spurs. In the mostly perennial species from the eastern region there is a single (or slightly double) window in the middle of the upper lip below the sinus. In a few related annuals there are two distinct windows, but they are always on the upper lip of the corolla and in no way associated with the mouths of the spurs.

The central posterior window is not simply a yellow mark on the corolla. It is of diverse form and may be nearly flat, or pouched, or drawn out into a short hollow cone. It differs from the rest of the corolla structurally, the cells of the inner epidermis being strongly mamillate and full of dense contents (see under FLORAL BIOLOGY). Recognition of the importance of these windows permits a re-assessment of the infrageneric classification.

HISTORY AND SUBDIVISION OF THE GENUS

Although we are only revising part of the genus in detail, it is necessary to review the history and subdivision of the whole in order to define our field.

Diascia was described by Link & Otto (1820) for a single species, *D. bergiana*, which was grown at Berlin from seed sent home by the pharmacist and naturalist C. H. Bergius, who collected in the Cape from his arrival in 1815 to his premature death in 1818. *D. bergiana* is one of the Cape annuals: the corolla has two small yellow pouches situated at the base of the lateral lobes.

It was soon recognised that other plants already described belonged to the same genus. Sprengel (1825) added *D. thunbergiana* Spreng. [i.e. *D. longicornis* (Thunb.) Druce, based on *Antirrhinum longicorne* Thunb.], *D. macrophylla* (Thunb.) Spreng. (based on *Hemimeris macrophylla*

Thunb.), and *D. montana* (L.f.) Spreng. [which is known today as *Hemimeris racemosa* (Houtt.) Merrill]. As the nomenclatural confusion between *Hemimeris* and *Diascia* primarily concerns the Cape species we need not go into it in detail here. It is sufficient to say that *Hemimeris* L.f. (1781) is now *nomen conservandum* with *H. montana* L.f. [= *H. racemosa* (Houtt.) Merrill] as its type; therefore *Diascia* is no longer threatened by the earlier *Hemimeris* L. (1760) based on the plant we now know as *Diascia capensis* (L.) Britten.

Bentham (1836a) made the first comprehensive study of *Diascia* recognising 17 species. He arranged them in three unranked groups **Brachycarpae*, ***Leptocarpae* and ****Racemosae*. The type species, *D. bergiana*, belongs to *Leptocarpae*. Wettstein (1894) combined the first two groups as sect. *Axillares* (which in terms of the modern Code becomes sect. *Diascia*) and recognised the third as sect. *Racemosae* (Benth.) Wettst. (if we give it the authorities now enjoined by Art. 35.2). Hiern made no formal subdivision of the genus; his arrangement of the species nearly reflects Bentham's although, as will be seen, the five anomalous species at the beginning (all unknown to Bentham) need redistribution.

The primary characters used by Bentham, and following him by Wettstein, were drawn from the inflorescence, with a secondary character from the leaves. Thus sect. *Diascia* has axillary or subfasciculate flowers and leaves narrowed to the base; sect. *Racemosae* has a terminal raceme of flowers and leaves broader and more or less truncate at the base. It is now possible to add to the characters of sect. *Diascia* "windows two, at base of lateral corolla lobes associated with openings to pouches or spurs, very rarely (*D. engleri* Diels) absent"; and to that of sect. *Racemosae* "window usually central at base of upper lip, more rarely split into two contiguous parts, or two entirely separate windows, but these always on the upper corolla lobes and not associated with the openings to the spurs". It is significant that the few species in sect. *Racemosae* with two separated windows are ones that in habit (they are annuals) and in geographical distribution come nearest to the Cape sect. *Diascia*.

In Hiern's account in *Flora Capensis* (1904) species no. 6–22 belong to sect. *Diascia*; no. 23 has been transferred to *Diclis* (Hilliard & Burt, 1979: 313); no. 26–47 belong to sect. *Racemosae* except no. 45, *D. denticulata* Benth., which has been transferred to *Nemesia*. It is species no. 1–5 and 24–25 that need reconsideration:

1. *D. engleri* Diels—this is anomalous in its almost regular flower and in the corolla apparently lacking spurs, pouches or windows (cf. Vogel, 1974, fig. 13H). The rosulate habit and long one-flowered peduncles clearly mark it as belonging to sect. *Diascia*.
2. *D. monasca* Hiern—this is described as probably perennial and has

- a broad yellow pouch at the base of the upper lip. It belongs to sect. *Racemosae* and is treated below under *D. patens*.
3. *D. minutiflora* Hiern—the vegetative characters are clearly those of sect. *Diascia*.
 4. *D. tysonii* Hiern—this is indistinguishable from *D. alonsooides* Benth. (sect. *Racemosae*).
 5. *D. scullyi* Hiern = *Hemimeris racemosa* (Houtt.) Merrill (syn. *H. montana* L.f.).
 24. *D. dissecta* Hiern—this is very close to, and perhaps not distinct from, *D. unilabiata*.
 25. *D. unilabiata* (Thunb.) Benth. This has its few flowers arranged racemously at the top of the unbranched stem: but the two yellow windows are clearly associated with the lateral pouches (see Rice & Compton, 1951 t. 116), and the pinnatifid leaves suggest it is to be referred to sect. *Diascia*, though the curious corolla form and the racemose flowers mark it off rather sharply from the rest of the section.

AFFINITIES OF *DIASCIA*

In 1835 Bentham established the tribe Hemimerideae for the South African genera *Hemimeris* L. (incl. *Diascia*) and *Nemesia* Vent. and the South American *Angelonia* Humb. & Bonpl. and *Thylacantha* Nees & Mart. In the next year (Bentham, 1836a), he recognised *Diascia* as distinct from *Hemimeris* and added the genus *Diclis* Benth. Hemimerideae were essentially distinguished from Antirrhineae by the valvular, not porose, dehiscence of the capsule. *Colpias* Benth. was at first referred to Digitaleae (Bentham, 1836b), but was transferred to Hemimerideae when Bentham again revised the group for De Candolle's *Prodromus* (Bentham, 1846).

In 1835 Bentham had placed the South American *Alonsoa* Ruiz & Pavon in Verbasceae, but in *Genera Plantarum* (1876) he moved it into Hemimerideae alongside *Angelonia*, which now included *Thylacantha*. In 1842 Kunze had described a South African plant as a distinct genus *Schistanthe*, but Bentham (1876) justifiably reduced this to *Alonsoa* (see APPENDIX).

Wettstein (1894) altered Bentham's concept of Hemimerideae by transferring *Nemesia*, *Diclis* and *Colpias* to Antirrhineae. The character on which he effected this shift was the presence of a corolla tube in Antirrhineae. This is obviously using tube in the precise sense of tubular, not, as is so often done, merely as a term for the lower gamopetalous part of the corolla. In the Hemimerideae in Wettstein's sense this gamopetalous part may be bowl-shaped and it may also be invaginated at the base, as in many *Diascia*; but it does not form a simple tube. However, the difference is not fundamental.

In *Ornithoboea* C.B. Cl. (Gesneriaceae) the species show a range from a straight tube to a much abbreviated almost globular one (see Burt, 1958). It would be foolish to rely too much on analogy from another family, but even in *Nemesia* itself the range of tube-form is considerable. This character is not sufficiently clear-cut and decisive to over-rule Bentham's observation of the difference in fruit-form. Furthermore, fruit-form is backed up by the form of the androecium, for both in *Nemesia* and in *Diclis*, as in *Diascia*, the filaments of the anterior stamens curl round the base of those of the posterior ones, and the anterior anthers take up a posterior position. This does not happen in Antirrhineae. Thus there is every reason to believe that *Diascia* and *Nemesia* are quite closely allied.

Of *Nemesia* Bentham (1836a) wrote "The structure of the sexual organs is the same as in *Diascia*, but the two concavities of the corolla are confluent into one pouch or spur, sometimes retuse or slightly emarginate at the extremity . . .". Bentham was not, of course, writing with an evolutionary concept in mind, but the possibility that the single spur or pouch of *Nemesia* represents a confluence of the two found in *Diascia* is suggestive. In *Nemesia*, for example in *N. strumosa* Benth. (cf. Bot. Mag. tab. 7272), it can certainly appear to be a double structure with a well-marked median groove; though whether this groove has any phyletic significance or is the mere result of its being a median structure in a bilaterally symmetrical flower is not yet clear.

There is then a group of 5 genera in South Africa, *Colpias*, *Diascia*, *Diclis*, *Hemimeris* and *Nemesia*, that can be accepted as fairly close allies. Where else do their affinities lie? Bentham associated with them the South American *Angelonia* and, later, *Alonsoa*. Whereas in *Diascia* the elaboration of the corolla takes the form of spurs, pouches and windows, in *Angelonia* the diversification of the palate is into a bowl-shaped structure and the rim between this bowl and the anterior lobe of the corolla may produce curious comb- or horn-like outgrowths. In *Alonsoa* the corolla is resupinate, the enlarged lower lip (morphological) thus standing above the stamens as a sort of flag. A somewhat similar effect, without resupination, appears to be produced by the enlargement of the upper lip in *D. unilabiata* (Thunb.) Spreng., belonging to sect. *Diascia*, and to a lesser extent in *D. purpurea* in sect. *Racemosae*. Neither *Angelonia* nor *Alonsoa* show the twisting of the anterior filaments characteristic of *Diascia* and *Nemesia*. The fruit of South American *Alonsoa* is very similar to that of the large-fruited species of *Diascia*, while that of the South African species resembles that of the smaller-fruited species of *Diascia*. The seeds of *Alonsoa* are however quite different: oblong and grooved, not nearly spherical and heavily ornamented as in *Diascia*.

The little-known South African *Alonsoa penduncularis* (see APPENDIX) is

very important in providing a morphological link between the rest of the genus and *Diascia*. The critical feature is that there are two small yellow pouches at the base of the lateral corolla lobes. These immediately recall the pouches found in *Diascia*: they are not found in the South American species of *Alonsoa*. *Alonsoa peduncularis* is in other respects typical of its genus and well differentiated from *Diascia*, particularly in its resupinate corolla split to the base on one side, in the filaments not being twisted at the base and in its oblong grooved seeds.

The available evidence confirms the unity of Hemimerideae.

PHYTOGEOGRAPHY

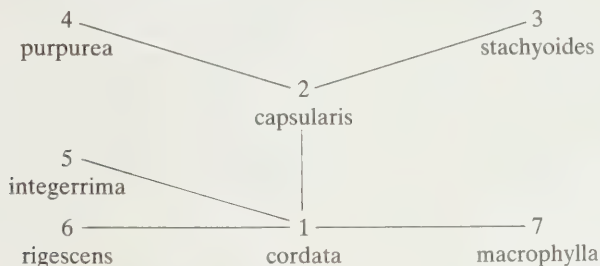
Links between the floras of Africa and America have long excited the interest of phytogeographers. Recently Stearn (1971) has discussed certain aspects of the data, with particular regard to stages leading up to complete discontinuity between America and Madagascar. Thorne (1973) has surveyed the problem in general and has listed Hemimerideae as one of the higher groups concerned, a position emphasised by the present recognition that *Alonsoa* is truly an amphi-atlantic genus. Despite much new data introduced by these authors, the discussion is still too narrowly based. Until the patterns of affinities in the wide pantropical genera and families have been assessed there can be little further progress. Here we only wish to draw attention to two additional examples in Scrophulariaceae: *Melasma* Berg. has three species in southern and eastern Africa and three in central and southern America (Melchior, 1940); *Alectra* Thunb., in which sect. *Alectra* is well-represented in Africa and ranges both eastwards through to East Asia and westwards, with 2 species in South America (Melchior, 1941). These two genera belong to the tribe "Gerardieae" (Wettstein, 1894—more properly Buchnereae), which within the classification of Scrophulariaceae is far removed from Hemimerideae. The Scrophulariaceae links contrast with the situation in the allied family Gesneriaceae where African representatives have wholly Asiatic affinities. Both sides of the balance sheet must be assessed.

Within southern Africa the distribution of *Diascia* sect. *Racemosae* invites comparison with that of other Scrophulariaceae such as *Zaluzianskya* sect. *Zaluzianskya* and *Glumicalyx*. It agrees with *Zaluzianskya* sect. *Zaluzianskya* in being primarily a group of the summer rainfall area, with a strong montane element: but both groups have typical members, some of them annual, at lower altitudes and further south and west (*Zaluzianskya capensis* reaches the Cape Peninsula, *Diascia dielsiana* the Riversdale district) as well as a group of specialised annuals stretching across to the western Cape. However, *Zaluzianskya* sect. *Zaluzianskya* extends northwards

through the Transvaal to Inyanga in Zimbabwe, whereas *Diascia* sect. *Racemosae* stops on Platberg near Harrismith, the last upstanding basalt mass north of the main Natal Drakensberg. In this it resembles *Glumicalyx* (Hilliard & Burtt, 1977), which also has its most northerly station on Platberg, but that genus is wholly montane and ranges south only as far as the Cape Witteberg (Lady Grey district).

INTERRELATIONSHIP OF SPECIES

Within sect. *Racemosae* we recognise 26 species, which may be grouped in a number of small alliances. In the text these can only be considered in a linear order, so we give a small diagram to show our views, very speculative, of possible relationships. It may reasonably be argued that such species as *D. purpurea* or *D. lilacina* are at the ends of their respective lines of development. However, it is clear that we are dealing with a genus of considerable diversity but with relatively little evolutionary progression. As usual, some species are very closely allied, others are relatively isolated and bear witness to the many species that must now have become extinct.



Group 1, *D. cordata* group, includes also *D. racemulosa*, *D. ramosa* and *D. mollis*. All have diffuse stems, racemes that are often very lax, almost flagelliform, and long pedicels. In *D. cordata* and *D. mollis* the stamens project straight forward; in *D. racemulosa* they stand erect and the palate is raised into a median keel, which is clad in dark sessile glands; in *D. ramosa* two stamens are erect, two project forwards. The window, at least in *D. cordata* and *D. ramosa*, is double, composed of two almost contiguous yellow patches each forming a little pouch. The range is from the Boschberg near Somerset East through Transkei to southern Natal, with *D. cordata* itself standing a little apart, being found on the slopes of the Drakensberg and its outliers at 1 500–2 440 m.

In this group *D. cordata* and, probably, *D. ramosa*, are perennials, but *D. racemulosa* and *D. mollis* are annuals. It is the double yellow patch and

the occurrence of annuals that lead us to suggest that from this group through group 7 (which are all annuals) the Cape species of sect. *Diascia* are related to sect. *Racemosae*. The splitting of the genus into these two sections seems to be fundamental and we therefore place group 1 at the base of our diagram of relationships within sect. *Racemosae*.

Group 2 consists of *D. capsularis*, widespread from the eastern Cape to the Orange Free State (but absent from Transkei, Natal and Lesotho), and four more restricted montane species, *D. barberae*, *D. tugelensis*, *D. vigilis* and *Diascia* sp. nov. (no. 9). In terms of *Diascia* sect. *Racemosae* this group is the most difficult to characterise, having all the features of the section and no particular distinguishing ones.

Group 3 consists of *D. stachyoides*, *D. stricta*, *D. fetcaniensis* and *D. lilacina*. The first three species are very closely allied to the previous group: the distinguishing character is that the window instead of being concave from the inside, forming a small pouch, is more strongly developed into a distinct hollow cone. The plants also are generally more hairy than in the group 2. The fourth species, *D. lilacina*, stands apart at the end of this line of development. Its peculiar features are its very small flowers coloured lilac, not pink nor red, complete absence of lateral spurs, and the grey-green pollen of all four anthers; the conical window is well-developed.

Group 4 (*D. anastrepta*, *D. megathura*, *D. purpurea*) may be regarded as a separate development from group 2 characterised by large flowers with the anthers of the anterior stamens sterile or producing just a little yellow pollen. These stamens stand erect. The posterior ones lie on the floor of the palate and produce green pollen (see further under FLORAL BIOLOGY). In *D. purpurea* there is a unique development of the corolla: the upper lip is enlarged and overarches the rest of the flower: the lower lip is much reduced.

Group 5 comprises *D. integerrima*, *D. dielsiana* and *D. patens*. These are essentially eastern and southern Cape plants, although *D. integerrima* ranges into Natal and Lesotho. The distinguishing feature of *D. integerrima* is that the palate is strongly ridged and covered with dark glands. This condition has already been noted in *D. racemulosa* of group 1 and we assume that this is a true mark of affinity: but *D. racemulosa* has the straggly habit, long pedicels, broad leaves and wide-spreading spurs of *D. cordata*. *Diascia integerrima* and its allies have a more twiggy habit, narrow leaves, and stiff erect inflorescences of shortly pedicellate flowers. *D. integerrima* grows in exposed situations, often on cliffs, whereas *D. cordata* and its allies are found in damper places—thickets, forest margins, rough streambank grassland. Nothing is known of the ecology of *D. patens* and *D. dielsiana*.

Group 6 comprises only two species, *D. rigescens* and *D. personata*. These are much more robust, erect plants very similar to one another vegetatively. They are, however, remarkably different florally. *Diascia rigescens*

has a ridged palate covered with a dense crest of bright yellow stalked glands: these are unique in the genus. *Diascia personata* has a broad swollen palate that effectively closes the mouth of the corolla, and dark sessile glands are completely lacking.

Group 7 stands apart from the rest of sect. *Racemosae*. It comprises five species of annuals that approach the Cape sect. *Diascia*. The annuals are held together by habit and having two yellow patches either side by side within the central hollow or (in *D. alonsooides*) lying flat at the base of the two upper lobes. The species are *D. alonsooides*, *D. macrophylla*, *D. parviflora*, *D. veronicoides* and *D. dissimulans*. They are all found in the Cape and are more southerly and westerly than most other species of sect. *Racemosae*. Though it is convenient to treat them together, they are not all closely related; for instance *D. veronicoides* has a remarkable narrow fruit and elongate seeds. They may be relict species of a larger group that made the transition to the annual habit but has been largely superseded by species of sect. *Diascia*.

FLORAL BIOLOGY

Knowledge of the floral biology of *Diascia* is in its infancy. Vogel (1974) compared the structure and secretions of the black glands found on the corollas of *Diascia* with those of other Scrophulariaceae, notably *Angelonia* and *Calceolaria*, that he has studied in South America. The similarities are very great. The South American plants secrete oil, not nectar, and they are visited and pollinated by oil-collecting bees. Vogel recorded that, in South America, 275 species of bee in 8 genera were oil-collectors and that there were some 1 260 oil-flowers in 50 genera and 5 different families.

Having recognised that *Diascia* (and *Bowkeria verticillata*, another South African member of Scrophulariaceae) had oil-producing flowers, Vogel was able to predict that some species at least, of *Diascia* would prove to be pollinated by oil-collecting bees. However, he was unable to observe these in the field, and at that time none had been recorded from southern Africa. More recently Michener (1981) has suggested that bees of the genus *Rediviva* (Mellitidae) are oil-collectors and Professor Vogel has evidence on the basis of new material collected by U. Müller-Doblies, that a bee of this genus is associated with *Diascia longicornis* (Thunb.) Druce, a species of sect. *Diascia* (Vogel, 1984a, b). Within the geographical range of *Diascia* sect. *Racemosae*, species of bee assigned to *Rediviva* (Michener, 1981) are known from Lady Grey (north eastern Cape), from Royal Natal National Park (in the Drakensberg), and from Karkloof (in the Natal Midlands). If pollination of *Diascia* is restricted to this specialised endemic genus of oil-collecting bees, the fact that plants in cultivation in Britain have never set any seed is easily understandable.

The first observations on pollination in a species of sect. *Racemosae* have just recently been made by John Manning (University of Natal) on *D. anastrepta*, a species with two stamens held erect and producing a little yellow pollen, or none at all, the other two stamens projecting forwards along the palate and producing green pollen (Fig. 8). Mr. Manning observed visits of a bee [*Rediviva politissima* (Cockerell)] to the *Diascia* colony between 08h30 and 09h30 on 7 December, 1983, in a valley at 2 100 m below Ship's Prow Pass in the Natal Drakensberg. Three visits were observed. The bees fly directly into the corolla. The mandibles are thrust into the window of the posticous lip; the forelegs are spread into the spurs; the midlegs clasp the lower edge of the mouth of the spur; the tarsi of the hindlegs clasp the sinus between lateral and anticus petals; the abdomen is curved down and forwards so that it is the dorsum of the tip that rubs against the anthers. The forelegs seem to perform scraping movements. The reduced stamens, may, perhaps, support the bee below the thorax and abdomen.

From the observations made it would seem that the bee may visit only a single flower in the colony before leaving, or may visit a number. In any event it remains at a flower for only 2–3 seconds. Pollen is not collected from *D. anastrepta* and adheres to the tip of the abdomen fortuitously. The scopae may, however, contain copious pollen from other sources. Whether some secretion is obtained from the papillate cells of the window is as yet uncertain. Otherwise *D. anastrepta* is visited solely for the oil in the spurs.

Mr. Manning also observed that smaller bees (belonging to Halictidae) are more frequent visitors and enter the hollow in the anticus lip containing the stamens and style, and beneath the reduced stamens. They may also enter the flower from the sides or above. Pollen is collected assiduously, the midlegs being used to transfer the pollen to the scopae on the hindlegs.

These bees seem to be opportunists, both by their behaviour (the inconsistent manner in which they enter the flowers and the fact that they visit other species of *Diascia*, for example, *D. cordata*) and by their failure to make any use of the spurs or window.

While patches of black glands may be present on the surface of the corolla, variously disposed in different species, they are particularly well-developed within the spurs, often on one side only towards the tip. It will be apparent from the taxonomic section that these spurs vary from species to species in size and curvature. It is therefore very probable that different bees are concerned in the pollination of different species of *Diascia*.

Diversity in the precise pollination mechanism is also indicated by the differing positions in which the stamens are held. In the majority of species (15—see table) they project forward along the floor of the palate and must deposit pollen on the underside of the visitor (sternotribic pollination). In another group (probably 6 species—see table) the anthers are held erect and

pollen must be deposited on the head or back of the insect (nototribic pollination). In a third group (5 species, see table), we find the development of differences between the two pairs of stamens. The anthers of the posticous pair are held on the floor of the palate, those of the anticus pair are held erect. One of these species, *D. ramosa*, has the anthers of the erect stamens slightly larger than those of the lower pair; it has a spurless, campanulate, corolla, but is unfortunately known only from the type material and little can be said about it. In *D. anastrepta*, *D. megathura* and *D. purpurea* the anthers on the corolla floor produce grey-green pollen and the stigma is associated with these, while the upper anthers are much reduced and produce only small quantities of yellow pollen. Vogel (1974) has already pointed this out for *D. purpurea* and has since elaborated on this form of heteranthy where certain anthers are conspicuous and produce a little "food" pollen, whereas the effective pollen is produced by other less conspicuous anthers (Vogel, 1978). The small-flowered *D. lilacina* stands alone: both upper and lower anthers appear to be fully fertile and all produce grey-green pollen. The stigma, however, is positioned just above the lower anthers and *D. lilacina*, like the other species just mentioned, must have sternotribic pollination.

TABLE OF STAMINAL POSITIONS

<i>Stamens projecting forwards</i>	<i>Stamens erect</i>	<i>Two stamens erect, two projecting forwards</i>
1. cordata	2. racemulosa	3. ramosa
4. mollis	17. integerrima	13. lilacina
5. capsularis	18. dielsiana	14. anastrepta
6. barberae	19. patens (?)	15. megathura
7. tugelensis	20. rigescens	16. purpurea
8. vigilis	21. personata	
9. sp. (?)		
10. stricta		
11. fetcaniensis		
12. stachyoides		
22. macrophylla		
23. parviflora		
24. dissimulans		
25. veronicoides		
26. alonsooides		

It is to be noted, that, while *D. anastrepta*, *D. megathura* and *D. purpurea* are closely related, the other two species showing differentiation between the stamens belong to different taxonomic groups. It seems, therefore, that this development has arisen on three separate occasions within *Diascia* sect. *Racemosae*.

The window in the corolla has already been mentioned. It consists of a patch, or sometimes two patches, of yellow tissue usually flecked or netted with maroon. This patch is sometimes flat, more often shallowly concave (as seen from the face of the flower) and sometimes forming a distinct hollow cone which we have refrained from calling a spur only to avoid confusion with the true spurs. It seems likely that in all cases the window does act as a bright spot that may be visible to insect visitors, but what other function it may have is not yet known, though surely its diversity of form implies that such exists. Structurally the tissues of the window are well-marked, the inner epidermis consisting of cells with strongly developed papillae with dense contents (Fig. 1), quite unlike the smooth or slightly rounded cells of the rest of the corolla surface. In the young flower bud of *D. vigilis*, when it is still completely enclosed by the calyx, the corolla is pale green, the future window being marked by a maroon patch, coloured both inside and out. At a slightly later stage the outside is still maroon, but the inside has become yellow. There is clearly need for a detailed developmental study of these flowers, and a critical investigation to find out the function or functions that the various forms of the window perform. Until the behaviour of pollinators has been observed, it is fruitless to speculate how the differing details of spurs, gland patches, stamens and windows interact.

Several species of *Diascia* may grow in the same general area, sometimes in close proximity. For example, *D. vigilis* and *D. tugelensis* in Tugela Gorge; *D. purpurea*, *D. vigilis* and *D. tugelensis* along the path to The Sentinel; *D. anastrepta* and *D. purpurea* at the headwaters of the Loteni; *D. anastrepta*, *D. cordata* and *D. integerrima* in Sani Pass; *D. fetscaniensis*, *D. integerrima* and *D. stricta* on Ben Mcdhui. Yet we have seen no hybrids in these areas. The only evidence suggestive of hybridity is in the short and relatively broad-leaved forms of *D. integerrima*, for which hybridisation with *D. capsularis* is a possible explanation (see discussion under *D. integerrima*).

DIASCIA IN CULTIVATION

The first species of *Diascia* sect. *Racemosae* to be cultivated in Britain was *D. barberae*, of which seed collected in Lesotho by Col. J. H. Bowker was forwarded to Kew by his sister, Mrs. Barber, in 1870 (see under the species). It does not seem to have persisted for long.

Subsequently odd herbarium specimens, and the records of plants exhibited, in the *Journal of the Royal Horticultural Society*, show that plants under the name *D. barberae* were in cultivation at intervals over the next 100 years. The genus did not, however, become a horticultural favourite, as it must have done if it had become firmly established. Its failure was probably because plants are relatively short-lived and not fully hardy, do not set seed

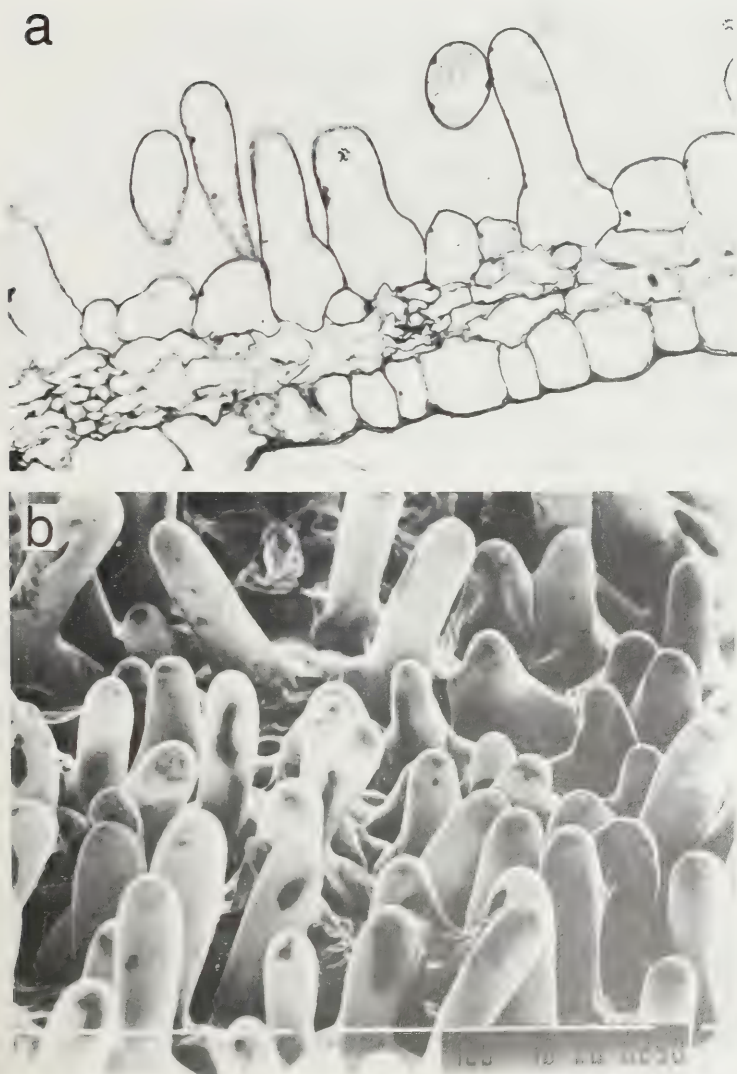


FIG. 1.

Papillose tissue of the window in *Diascia anastrepta*. a. T.S. ($\times 384$); b. surface view ($\times 275$). [Photos. A. Bennell]

in cultivation due to lack of their specialised pollinators (see under FLORAL BIOLOGY), and consequently need constant propagation from cuttings which need to be over-wintered under glass. Some of these temporary introductions seem to have been *D. capsularis* rather than *D. barberae*, but there are no details of origins.

More recently true *D. barberae* was grown at the Station Alpine de Lautaret from seed collected by L. Kofler in Lesotho, between Mokhotlong River and Orange River, 3 300–3 500 m, February 1962: there is a herbarium specimen dated 1969 at Kew, and it clearly shows the two small lateral patches of black glands characteristic of *D. barberae*.

In 1971 a cultivar, *Diascia* "Ruby Field", was exhibited at the Royal Horticultural Society in London (see Jl R. hort. Soc. 96: 67, 1971). It was said to be *D. barberae* $\times$ *D. cordata*, but seems to be a selected strain of *D. barberae*. In any case, the plant cultivated in Britain in recent years as *D. cordata* (exhibited at R.H.S. in London in 1972) is again *D. barberae*. Both these last two plants, *D. barberae* and its selected strain, "Ruby Field", are now obtainable in the trade in Britain.

The National Botanic Gardens, Kirstenbosch, has been successfully growing *D. integerrima* (as *D. moltenensis*) for some years and is now experimenting with other species.

D. rigescens, introduced from Mt. Kemp in the eastern Cape in 1977 (Hilliard & Burt 11032), has caught on in British horticulture and is becoming widely grown. Being a more robust species, it has better garden potential than the others, which tend to be of sprawling habit. However, some forms of *D. rigescens*, for example from the Zuurberg at Weza in southern Natal, would be less attractive as they have smaller, paler flowers and more lax habit. Several other species, including *D. anastrepta* (Hilliard & Burt 13703), *D. barberae* (new introduction, Hilliard & Burt 13736), *D. fetcaniensis* (Hilliard & Burt 12318), *D. megathura* (Hilliard & Burt 12465), *D. stachyoides* (Hilliard & Burt 14554), have been successfully introduced to the Royal Botanic Garden, Edinburgh, and are particularly successful at the Garden's outstation, the Logan Botanic Garden on the Mull of Galloway.

Diascia sect. **Racemosae** (Benth.) Wettst. in Engl. & Prantl, Nat. Pflanzenfam. 4(3B): 54 (1894).

Diascia *****Racemosae** Benth. in Hook., Comp. Bot. Mag. 2:17 (1836).

Lectotype: *D. capsularis* Benth.

Annual or perennial herbs, *leaves* opposite and decussate, base broad, usually petiolate. *Calyx* 5-partite. *Corolla* with a short tube, often invagi-

nated, usually with two lateral spurs with dark sessile glands within, limb bilabiate, lower lip three-lobed, upper lip two-lobed with a yellow translucent "window" below the sinus, more rarely the window split into two discrete patches. *Stamens* four, filaments of the anticus pair twisted at the base to bring them into the posticus position, anthers usually fertile, occasionally those of the anticus pair reduced or sterile. *Ovary* bilocular, ovules two to many in each loculus. *Capsule* septicidal, the valves shortly bifid; seeds usually strongly curved, straight in one species, heavily ornamented.

KEY TO THE SPECIES

- 1a Anthers of the anticus pair of stamens (which are twisted erect into the posticus position) noticeably smaller than those of the posticus pair, fertile or sterile; posticus stamens projecting straight forward 2
- 1b Anthers all alike, all four stamens either erect or projecting straight forward 7
- 2a Corollas with 2 lateral spurs 3
- 2b Corollas without lateral spurs 6
- 3a Corolla limb at least 18 mm long; leaves with distinct petioles 4
- 3b Corolla limb c. 12 mm long; leaves sessile 21. ***D. personata***
- 4a Spurs 3–4 mm long, curved down and forward under the bowl-shaped corolla tube 16. ***D. purpurea***
- 4b Spurs 6–8 mm long, spreading at right angles to the corolla tube 5
- 5a Hairs on the pedicels at least 0.5 mm long, those on the filaments of the reduced stamens mostly at least 1 mm long 15. ***D. megathura***
- 5b Hairs on the pedicels scarcely 0.25 mm long, those on the filaments of the reduced stamens up to 0.5 mm long 14. ***D. anastrepta***
- 6a Window drawn out into a hollow cone 13. ***D. lilacina***
- 6b Window with 2 very shallow concavities 3. ***D. ramosa***
- 7a Leaves in many pairs (rarely few and then flowering in seedling stage), either sessile or with petioles diminishing only gradually in length upwards. Mostly perennial, a few annual 8
- 7b Leaves in up to 7 pairs on each stem or branch, petiole-length diminishing rapidly upwards (lowermost pair of leaves on long petioles, uppermost almost sessile). Annual herbs 26
- 8a Leaves with petioles at least 1 mm long (ignore uppermost, reduced, leaves, which may be sessile) 9
- 8b Leaves sessile 25
- 9a Style c. 1.5 mm long; perennial herbs 10
- 9b Styles mostly 2–3 mm long; if only 1.75 mm, then an annual herb 16
- 10a Leaves narrowly to broadly ovate, ratio of length to breadth 1–1.5:1 11
- 10b Leaves linear, linear-lanceolate or oblong-lanceolate, ratio of length to breadth (2–)5–20:1 14
- 11a Spurs 4–7 mm long (measured on the inside, adjacent to the opening to the corolla tube) 12
- 11b Spurs 8–9 mm long 1. ***D. cordata***
- 12a Hairs on the pedicels mostly at least 0.5 mm long 12. ***D. stachyoides***
- 12b Hairs on the pedicels up to c. 0.25 mm long 13
- 13a Filaments 2 mm long; palate not keeled 9. ***Diascia* sp.**
- 13b Filaments 2.75–3 mm long; palate strongly raised into a median keel separating the entrances to the two spurs 17. ***D. integerrima***

- 14a Palate not raised, spurs either patent or diverging at an angle of c. 45° , ± straight; filaments 2–2,5 mm long 15
- 14b Palate strongly raised into a median keel separating the entrances to the two spurs, spurs directed straight down almost parallel to each other, tips strongly incurved; filaments 2,75–3 mm long 17. **D. integerrima**
- 15a Spurs 4–5 mm long, diverging at an angle of c. 45° ; central patch of dark sessile glands present at base of anticus corolla lobe 19. **D. patens**
- 15b Spurs 3–4 mm long, spreading at right angles to the tube; no dark sessile glands on face of corolla 18. **D. dielsiana**
- 16a Palate either with a centrally placed patch of dark sessile glands or glands wanting 17
- 16b Palate with 2 laterally placed patches of dark sessile glands 6. **D. barberae**
- 17a Perennial herbs, stems up to 2 mm diam. 18
- 17b Annual herbs, lower part of main stem 3–4 mm diam. 23
- 18a Corolla limb 15–20 × 12–15 mm, spurs (measured on inside, adjacent to opening to corolla tube) 4 mm long, leaves mostly 4–8 mm broad 10. **D. stricta**
- 18b Corolla limb 18–28 × 15–25 mm, spurs 5–11 mm long, leaves mostly 5–20 mm broad 19
- 19a Many of the hairs on the pedicels at least 0,5 mm long 20
- 19b Hairs on the pedicels scarcely 0,25 mm long or sometimes wanting 21
- 20a Base of corolla tube invaginated, the opening lying at the bottom of a hollow and the calyx segments thereby reflexed; window drawn out into a cone 1,5–2,5 mm deep; filaments glandular-pilose 11. **D. fetcaniensis**
- 20b Base of corolla tube scarcely invaginated, the calyx segments therefore lying flat against the tube; window shallowly concave, c. 1–1,5 mm deep; filaments glandular-pubescent 8. **D. vigilis**
- 21a Spurs (measured on inside adjacent to opening in corolla tube) 5–7 mm long, tips markedly swollen; style 2,75–3 mm long 7. **D. tugelensis**
- 21b Spurs 7–11 mm long, narrowed towards the tips; styles c. 2–2,5 mm long 22
- 22a Leaves ovate or ovate-lanceolate, mostly 10–25 × 5–20 mm (ratio 1–2:1); style c. 2,5 mm; usually 2 lateral patches of glands on palate ... 6. **D. barberae**
- 22b Leaves deltoid or deltoid-ovate, mostly 11–32 × 5–17 mm (ratio 2–3(–5):1); style c. 2 mm; glands, if present, on centre of palate 15. **D. capsularis**
- 23a Palate raised into a median keel separating the entrances to the two spurs; keel clad in dark glands 2. **D. racemulosa**
- 23b Palate not raised, dark glands wanting 24
- 24a Corolla without lateral spurs; ovules 2 in each locus 3. **D. ramosa**
- 24b Corolla with lateral spurs c. 3 mm long; ovules many in each locus 4. **D. mollis**
- 25a Spurs c. 3 mm long (measured on inside adjacent to opening in corolla tube) directed straight down and with dark sessile glands within; palate strongly raised into a short median keel separating the openings to the two spurs; keel densely clad in stalked glands yellow when fresh 20. **D. rigescens**
- 25b Spurs c. 1,5 mm long, directed inwards, dark sessile glands wanting; palate strongly raised into a pouched transverse keel closing the mouth and hiding the openings to the spurs; keel eglandular 21. **D. personata**
- 26a Corolla subrotate, without pouches or spurs 26. **D. alonsooides**
- 26b Corolla distinctly bilabiate, spurred 27
- 27a Spurs up to 4 mm long 28
- 27b Spurs 10–13 mm long 22. **D. macrophylla**
- 28a Filaments of posticous pair of stamens distinctly branched . 24. **D. dissimulans**

- 28b Filaments of posticous stamens not branched, at most abruptly curved and thickened at the tip with, rarely, a minute projection as well 29
- 29a Spurs up to 1 mm long, curved inwards; capsules oblanceolate in outline, seeds curved and ridged 23. **D. parviflora**
- 29b Spurs c. 4 mm long, curved out and down, capsules linear, seeds straight, muricate 25. **D. veronicoides**

GROUP 1

1. ***Diascia cordata*** N.E. Br. in Kew Bull. **1895**: 151 (1895); Hiern in Thiselton-Dyer, Fl. Cap. **4** (2): 158 (1904). Lectotype: Drakensberg Range, [Estcourt distr.] Tiger Cave Valley, 6000–7000 ft., Jan. 1895, *Evans* 382 (K).

Perennial herb, stock eventually woody, up to c. 10 mm diam., stems many from the crown, straggling, of indeterminate length, up to 2,5 mm diam., simple below, branching above, branches often flagelliform, glabrous. *Leaves* mostly 13–30(–50) × 13–25(–38) mm, diminishing in size upwards, ovate, apex obtuse, base subcordate, margins sharply serrate, glabrous; petiole 2,5–7 mm long. *Flowers* many in very lax leafy racemes, sometimes compounded into panicles; lower bracts leaf-like, becoming much smaller upwards; pedicels mostly 18–37 mm long, often wide-spreading, often recurved in fruit, glabrous to sparsely glandular-pubescent. *Calyx* segments lanceolate, two anticus ones c. 4–4,5 × 1–1,5 mm, three posticus ones slightly smaller, glabrous. *Corolla* tube c. 4 mm long, deeply invaginated, two lateral spurs c. 8–9 mm long, slightly curved, strongly divergent in a downward direction, with a patch of dark sessile glands within near the tips; limb c. 18–20 × 11–17 mm, anticus lobe c. 8–10 × 10–13 mm, lateral lobes 5 × 5,5–7 mm, posticus lobes 4–4,5 × 4–5 mm, all subrotund, pale or rose-pink, sparsely glandular-pubescent outside, glabrous inside except for a centrally placed patch of dark sessile glands on the palate (or glands sometimes wanting), palate slightly raised with two parallel median channels to accommodate the filaments, the “window” concave with two further yellow elliptic concavities flanked by reddish blotches and streaks. *Stamens* projecting forward, filaments c. 2,25 mm long, glandular-puberulous, anthers 1 mm long, cohering strongly, pollen yellow. *Ovary* 1–1,5 × 1 mm, deltoid in outline, ovules 2–4 in each loculus; style 1,5 mm long, stigma capitate, lying between the anthers. *Capsules* 3–5 × 3–4 mm, ovoid; seeds c. 1,75 mm long, ridged but not winged. Figs 2 d–f, 3 a–d.

SELECTED CITATIONS

NATAL—2929 (Underberg): Estcourt district, near Champagne Castle Hotel (-AB), c. 5000 ft., 30/1/1944, *Acocks* 10104 (PRE); Giants Castle Game Reserve, Bannerman area, 7500 ft., 10/2/1965, *Trauseld* 324 (PRE); *ibidem*, c. 6000 ft.,

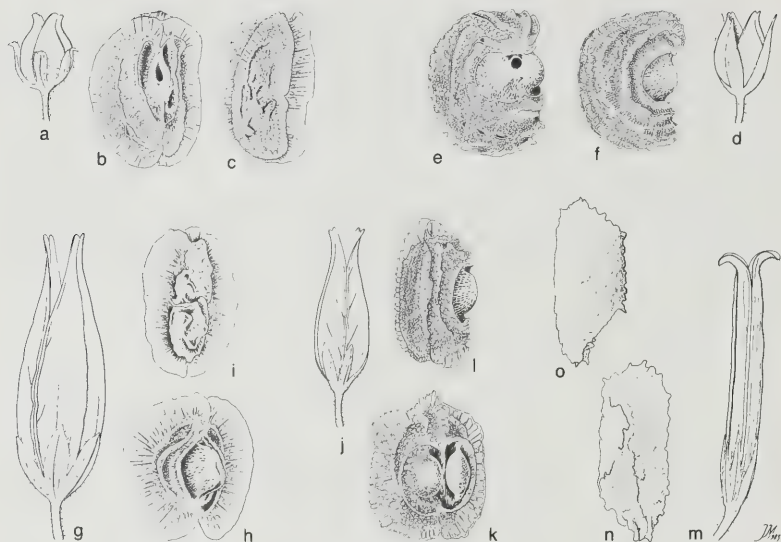


FIG. 2.

Fruits and seeds of *Diascia*. a-c, *D. rigescens* (Hilliard & Burt 12353); d-f, *D. cordata* (d, Hilliard & Burt 11821; e, f, Hilliard & Burt 15522); g-i, *D. megathura* (Hilliard & Burt 12465); j-l, *D. integerrima* (Hilliard 3962); m-o *D. veronicoides* (m, Compton 11552; n, o, Grant & Theiler 4890). a, d, g, j, m $\times 2$; b, c, e, f $\times 12$; h, i, k, l $\times 17.5$; n, o $\times 25$.

14/12/1978, Stewart 2075 (E, K, NU); Hlatikulu, Mooi River watershed (-BA), 23/12/1901, Johnston 756 (E); Near Tabamhlope Police Post, c. 5500 ft., 19/11/1944, Acocks 10783 (BOL); Between Howick and Estcourt, 4000 ft., 18/12/1885, Wood 3564 (BOL, K, SAM); Lion's River distr., Karkloof (-AC), 5400 ft., 20/2/1895, Schlechter 6831 (BOL, GRA, PRE); Mpendhle distr., Loteni Nature Reserve, Ngondwini Valley (-AD), c. 1 800 m, 24/12/1978, Hilliard & Burt 11821 (E, NU); Vergelegen Nature Reserve, Mahlangubo River valley (-CB), 1/1/1978, Hilliard & Burt 11150 (E, NU); Above Vergelegen, tributary stream of Ntshishini River, 2 225 m, 4/12/1982, Hilliard & Burt 15878 (E, K, NU, PRE); Underberg distr., Sani Pass, c. 2 440 m, 17/2/1982, Hilliard & Burt 15522 (E, NU); Polela, 4-5000 ft., 8/1/1892, Wood 4582 (BOL, NH, SAM).

Diascia cordata appears to be confined to the Natal Drakensberg and its foothills, between c. 1 500 and 2 440 m. It grows in rank vegetation along streams, sprawling and clambering, and in Sani Pass it forms conspicuous

tangles along the roadside. It is easily recognised by its very lax leafy inflorescences, corollas with long spreading spurs and twin yellow spots in the "window", and short broad capsules, often containing only one seed in each locus. The species with which it is occasionally confused are *D. racemulosa*, *D. ramosa* and *D. mollis*; the distinctions are given there.

2. *Diascia racemulosa* Benth. in Hook., Comp. Bot. Mag. 2: 17 (1836) et in DC., Prodr. 10: 259 (1846); Hiern in Thiselton-Dyer, Fl. Cap. 4 (2): 156 (1904). Type: [Transkei] Pondoland, bushy places in valleys, between Umtata River and Umzimkulu River, 1000–2000 ft., May, *Drège* 4849 (K, holo.; E, iso.).

D. aliciae Hiern in Thiselton-Dyer, Fl. Cap. 4 (2): 155 (1904). Type: Transkei, Kentani distr., in valleys and along streams, 1500 ft., Feb. to May, *Pegler* 401 (K, holo.; BM, BOL, SAM, iso.).

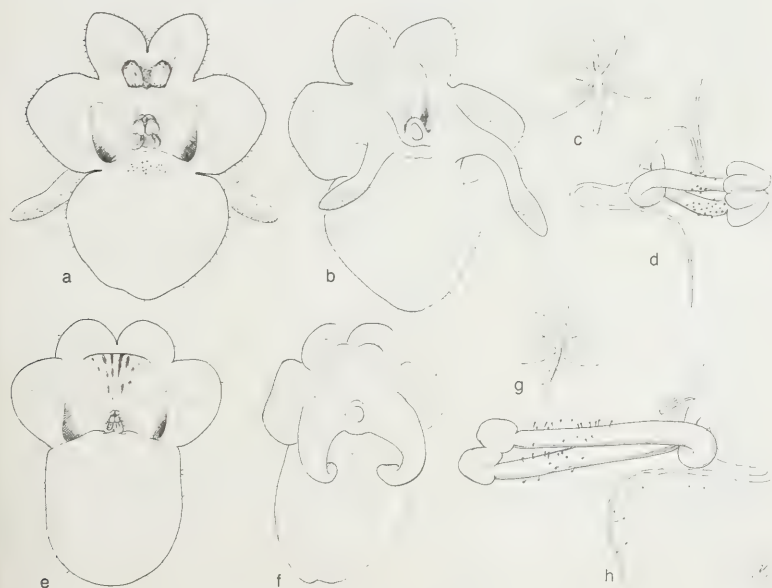


FIG. 3.

Diascia cordata (Hilliard & Burt 15522): a, corolla, front view ($\times 2.5$); b, corolla, back view ($\times 2.5$); c, calyx ($\times 2.5$); d, stamens ($\times 12.5$). *D. mollis* (Hutchings 428): e, corolla, front view ($\times 2.5$); f, corolla, back view ($\times 2.5$); g, calyx ($\times 2.5$); h, stamens ($\times 10$).

D. expolita Hiern in Thiselton-Dyer, Fl. Cap. 4 (2): 156 (1904). Type: Natal, Ismont [near Mid Illovo], 2000 ft., April, Wood 1841 (K, holo.; NH, SAM, iso.).

Diffuse annual herb, main stem up to 750 mm long, 3–4 mm diam., branching low down into lax spreading panicles, glabrous. *Leaves* on the main branches mostly $35\text{--}55 \times 28\text{--}40$ mm, smaller upwards, ovate, apex acute, base subcordate, margins sharply serrate, glabrous; petiole 4–11 mm long. *Flowers* many in somewhat crowded or more lax and then flagelliform racemes compounded into panicles; lowermost bracts leaf-like, rapidly smaller upwards and then mostly $4\text{--}8 \times 1\text{--}2$ mm, lanceolate, shortly acuminate, glabrous; pedicels mostly 15–35 mm long, filiform, wide-spreading, sometimes recurved in fruit, glabrous to sparsely glandular-pubescent. *Calyx* segments lanceolate, acute to shortly acuminate, two anticus ones $2,5\text{--}3,5 \times 0,75\text{--}1$ mm, three posticus ones slightly smaller, glabrous. *Corolla* tube c. 4 mm long, not invaginated, two lateral spurs c. 5 mm long, slightly curved, directed downwards, with a patch of dark sessile glands within near the tips; limb c. $14\text{--}15 \times 12\text{--}13$ mm, anticus lobe c. 7×7 mm, subrotund, two lateral lobes, $3,5\text{--}4 \times 3\text{--}4$ mm, oblong-elliptic, two posticus lobes $3\text{--}3,5 \times 2,5\text{--}3$ mm, oblong-elliptic, pale rose-pink, purplish in the throat, sparsely glandular-pubescent outside, glabrous inside except for a patch of dark sessile glands on the palate, which is elevated into a median keel separating the openings to the two spurs, “window” deeply concave, hemispherical. *Stamens* erect, filaments of the anticus pair c. 2,5 mm long, straight except for the usual twist at the base, posticus pair sharply bent above the middle and thickened there, all glandular-pubescent; anthers 0,75 mm long, cohering strongly, partly hidden in the window. *Ovary* c. $1,25\text{--}1,5 \times 1$ mm, ovules 3–6 in each loculus; style 1,75–2 mm long, stigma capitate, lying between the anthers. *Capsules* c. 5×3 mm, ovoid; seeds 1,5 mm long, curved, ridged.

CITATIONS

TRANSKEI—3129: Pondoland, e hort. Kirstenbosch 3/1933, Robinson 376/33 (BOL); 7 miles from Spes Bona on road to Mtontsasa (-BD), 8/7/1976, van Wyk 1537 (PRE).
—3228 (Butterworth): Kentani distr., 3,8 miles N W of Kentani (-AD), 10/3/1955, Marais 736 (K, PRE).

Diascis racemulosa grows in damp sheltered places along streams or on the margins of forest patches. In recent years, it has been found only in Transkei, between c. 300 and 600 m above sea level. The original collection of *D. expolita* came from the farm Ismont near Mid Illovo in southern Natal, at much the same altitude. No specimens of *Diascia* have ever been

re-collected in coastal Natal; the natural vegetation on Ismont has been devastated by plantations of sugar and trees, and the streamsides and forest patches laid waste; we have searched there in vain. But despite the drawback of working entirely from dried material, some of it in poor condition, there is little doubt that both *D. expolita* and *D. aliciae* are conspecific with *D. racemulosa*, which Drège collected between the Umtata and Umzimkulu rivers in 1836.

Diascia racemulosa is occasionally confused with *D. cordata*, which has similar lax inflorescences, but *D. cordata*, a perennial herb, has the corolla tube deeply invaginated, lateral spurs 8–9 mm long (not c. 5 mm), corolla limb c. 18–20 mm long (not 14–15 mm) and the palate only slightly raised (not forming a median keel), and reclining (not erect) stamens.

3. ***Diascia ramosa*** Scott Elliot in Journ. Bot. **29**: 69 (1891); Hiern in Thiselton-Dyer, Fl. Cap **4** (2): 157 (1904). Lectotype: Cape, Somerset East, Boschberg, 4500 ft., April, MacOwan 1968 (K; BM, PRE, isolec.).

A diffuse herb, possibly perennial, stems loosely branched above, flexuous, glabrous. *Leaves* on the main branches c. 13–35 × 10–15 mm, smaller on the inflorescence branches, ovate, apex acute, base subcordate, margins with a few sharp or obscure teeth, glabrous; petiole 1–2 mm long. *Flowers* many in somewhat crowded to lax racemes, sometimes compounded into very lax panicles; lowermost bracts c. 3 × 2 mm, otherwise resembling the leaves; pedicels c. 7–14 mm long, filiform, they and the rhachis glandular-puberulous. *Calyx* lobes lanceolate, acute, two anticus ones c. 2 × 1 mm, three posticus ones slightly smaller, glandular-puberulous. *Corolla* tube c. 2 × 3 mm, not invaginated, broadly campanulate without lateral spurs or pouches; limb c. 8–9 × 7–9 mm, anticus lobe 3–4 × 3–4 mm, two lateral lobes 2–3 × 2.5–3.5 mm, two posticus lobes c. 2–3 × 2.75–3 mm, all subrotund, probably all rose-pink, glandular-pubescent outside, glabrous inside, "window" very shallowly concave with two further yellow lateral concavities. *Stamens* unalike, filaments of the posticus pair 2 mm long, directed straight forward, anthers 0.5 mm long; filaments of the anticus pair 1.5 mm long, twisted erect into the posticus position, anthers 0.75 mm long, cohering strongly. *Ovary* 0.75 × 0.75 mm, ovules 2 in each loculus; style 2 mm long, stigma capitate. *Capsule* c. 1.75 × 1.75 mm; seeds c. 2 mm long, curved, ridged.

CITATION

CAPE—3225 (Somerset East): Boschberg (-DA), 4000 ft., beside path in bush, May, Scott Elliot 488 (E, K).

Diascia ramosa is known only from the two syntypes collected on Bosch-

berg, Somerset East, at the end of the last century. We have sought the plant there without success, but the forest on the mountain has been badly disturbed. Hiern followed Scott Elliot in describing the corolla as having two short rounded spurs or pouches; but the apparent rounded pouch visible on a corolla of the lectotype proved to be an artefact of pressing and drying.

The corolla is remarkable in that it is campanulate, with the limb only slightly bilabiate, very different from the twin-spurred corolla of *D. cordata*, with which the relationship of *D. ramosa* surely lies: they are similar in habit, foliage, and their short broad capsules with few seeds.

4. *Diascia mollis* Hilliard & Burtt, species nova; *D. racemulosae* Benth. affinis sed calyce glanduloso-pubescente (nec glabro), corollae tubo invaginato, palato vix elevato et glandulis sessilibus destituto (nec valde elevato-carinato glandulis sessilibus fuscis praedito), filamentis 3 mm longis (nec c. 2,5 mm) porrectis (nec erectis), stylo 2,25–2,5 mm longo (nec 1,75–2 mm) distinguenda.

Herba annua, diffusa; caulis ad 750 mm longus, simplex vel inferne ramosus, glaber, in inflorescentia glanduloso-pubescent. Folia plerumque 16–50 × 18–40 mm, sursum decrescentia, ovata, glabra, apice acuto vel obtuso, basi subcordata, marginibus saepe acute interdum obscure serrata; petiulus 5–16 mm longus. Flores numerosi, in racemos densos vel laxiores et flagelliformes saepe in paniculam ramosos dispositi; bractae infimae foliaceae, sursum celeriter minores et plerumque 3–4 × 1–2 mm, lanceolatae, acutae vel acuminatae, plerumque glanduloso-pubescentes interdum pilis paucis vel nullis pedicelli plerumque 11–20 mm longi, filiformes, plerumque late patentes, glanduloso-pubescentes. Calyx 5-partitus; segmenta lanceolata acutissima, glanduloso-pubescentia, 2 antica c. 3 × 0,75–1,25 mm, 3 postica paulo minora. Corolla tubo c. 3 mm longo invaginato; calcar duo lateralia c. 3–5 mm longa, deorsum curvata, intus ad apices glandulis sessilibus fuscis praedita; limbus c. 17 × 15 mm, lobo antico c. 8–9 × 8–9 mm, duobus lateralibus 3,5–5 × 4–6 mm, duobus posticis c. 3 × 3–4 mm, omnibus subrotundatis roseis extra parce glanduloso-pubescentibus intus glabris, palato vix elevato; fenestra concava, c. 1,5 mm alta. Stamina 4, aequalia, porrecta, filamentis 3 mm longis glanduloso-puberulis; antherae 0,75–1 mm longe, valde inter se cohaerentes. Ovarium 0,25–1,5 × 0,75–1 mm; ovula in utroque loculo saltem 6; stylus 2,25–2,5 mm longus; stigma capitatum inter antheras dispositum. Capsula c. 4,5–6 × 2–3 mm; semina 1,25 mm longa, leviter costata.

Type: Transkei—3128 (Umtata): Libode distr., near Misty Mount, Corana Location (-DB), 12/4/1954, Barker 8242 (NBG, holo.).

Diffuse annual herb, main stem up to 750 mm long, 3–4 mm diam. (but plant will flower in seedling stage), simple or branching low down into spreading panicles, glabrous becoming glandular-pubescent on the inflorescence axes. *Leaves* glabrous, mostly $16\text{--}50 \times 18\text{--}40$ mm, smaller upwards, ovate, apex acute to obtuse, base subcordate, margins often sharply serrate, occasionally only obscurely so; petiole 5–16 mm long. *Flowers* many in somewhat crowded or more lax and flagelliform racemes often compounded into panicles; lowermost bracts leaf-like, rapidly smaller upwards and then mostly $3\text{--}4 \times 1\text{--}2$ mm, lanceolate, acute to acuminate, mostly glandular-pubescent, hairs occasionally few or wanting; pedicels mostly 11–20 mm long, filiform, mostly wide-spreading, glandular-pubescent. *Calyx* segments lanceolate, very acute, glandular-pubescent, two anticonous ones c. $3 \times 0,75\text{--}1,25$ mm, three posticous ones slightly smaller. *Corolla* tube c. 3 mm long, invaginated, two lateral spurs c. 3–5 mm long, curved downwards, with a patch of dark sessile glands within near the tips; limb c. 17×15 mm, anticonous lobe c. $8\text{--}9 \times 8\text{--}9$ mm, two lateral lobes $3,5\text{--}5 \times 4\text{--}6$ mm, two posticous lobes c. $3 \times 3\text{--}4$ mm, all subrotund, rose-pink, sparsely glandular-pubescent outside, glabrous inside, without sessile glands on the palate, which is scarcely raised; “window” concave, c. 1,5 mm deep. *Stamens* projecting forward, filaments 3 mm long, glandular-puberulous; anthers 0,75–1 mm long, cohering strongly. *Ovary* $1,25\text{--}1,5 \times 0,75\text{--}1$ mm, ovules at least 6 in each loculus; style 2,25–2,5 mm long; stigma capitate, lying between the anthers. *Capsules* c. $4,5\text{--}6 \times 2\text{--}3$ mm; seeds 1,25 mm long, weakly ridged. Fig. 3 e–h.

CITATIONS

TRANSKEI—3129 (Port St. John's): Marubeni (-AC), 20/4/1983, *Hutchings* 428 (E, NU); Near Port St. John's. Tumboa (-DA), 30/12/1927, *Grant & Blenkiron* 3550 (BOL, PRE); c. 3 miles N E of Ludalasi Store, 800 ft., 11/9/1956, *Codd* 9751 (NBG); Ngqeleni distr., Ngqeleni commonage (-CA), 13/5/1954, *Barker* 8246 (NBG); Mqanduli distr., Coffee Bay (-CC), 6/3/1953, *Theron* 1490 (PRE); ibidem, 3/1947, *Lewis* 3030 (SAM).

—3228 (Butterworth): Willowvale distr., between Mpozolo School and Mendu, Msendu Halt (-BB), 1700 ft., 27/1/1966, *Wood* 63 (E, NU).

—3229 (Talemofu): Elliotdale distr., 5 miles inland of Hole-in-the-Wall (-AA), 1000 ft., 20/2/1966, *Wells* 3526 (PRE).

CAPE—3227 (Stutterheim): Victoria East, Hogsback, Bongo Mountains (-CA; 5000 ft., 20/4/1947, *Sidey* 706 (PRE).

Diascia mollis has a relatively wide geographical range, from Libode and Port St. John's in Transkei to Hogsback in the mountains almost due north of King William's Town, and an equally wide altitudinal range, from sea level to 1 500 m. It has been variously recorded as growing on and at the foot of cliffs close to the sea, in grassland, and in forest. It is clearly a rather

delicate herb, so, in common with many of its congeners, it probably favours damp and somewhat sheltered places among the coarse grasses and bushes that are found marginal to forest patches, which, in Transkei, descend to the sea.

Diascia mollis is commonly misidentified as *D. aliciae*, that is *D. racemulosa*, and occasionally as *D. cordata*. It is easily distinguished from *D. racemulosa* by its glandular-hairy calyx, invaginated corolla tube, palate without dark sessile glands and longer filaments (3, not 2.5 mm) which project straight forward (not erect, the anthers partially hidden in the window). *Diascia cordata* also has the corolla tube invaginated and the filaments directed forwards, but its perennial habit, glabrous calyx, longer spurs (8–9 mm, not 3–5 mm) and shorter filaments (c. 2.25 mm, not 3 mm) easily distinguish it.

GROUP 2

5. *Diascia capsularis* Benth. in Hook., Comp. Bot. Mag. 2: 18 (1836) et in DC., Prodr. 10: 259 (1846); Hiern in Thiselton-Dyer, Fl. Cap. 4 (2): 160 (1904); Batten & Bokelmann, Wild Flow. E Cape Prov. 133, pl. 105, 4 (1966). Type: Cape, Uitenhage and Albany, 1836, *Ecklon* (K, holo.; E, GRA, SAM prob. iso.).

Hemimeris elegans Hiern in Journ. Bot. 39: 102 (1901). Type: Orange River Colony, without precise locality, 1900, *Pateshall Thomas s.n.* (BM).

Diascia elegans (Hiern) Hiern in Fl. Cap. 4 (2): 159 (1904).

D. capsularis var. *flagellaris* Hiern in Fl. Cap. 4 (2): 160 (1904). Lectotype: Cape, Somerset div., Bruintjes Hoogte, 19/5/1813, *Burchell 3004* (K).

Perennial herb, taproot eventually thick and woody (c. 10 mm at crown), stems many from the crown, tufted, up to c. 600 mm long, 2 mm diam., simple or branching from the base, decumbent and rooting near the base, glabrous. *Leaves* glabrous, mostly 11–32 × 5–17 mm (ratio 2–3(–5):1), deltoid or deltoid-ovate, apex acute, base almost truncate to subcordate in larger leaves, margins sharply serrate, teeth few, mainly in the lower half; petiole 1–6 mm long. *Flowers* few to several in a lax terminal raceme, usually simple, sometimes branched at the base; bracts up to c. 4 × 3 mm, ovate, very acute, glandular-puberulous; pedicels mostly 12–35 mm long, ascending at an angle of c. 45°, they and the inflorescence rhachis glandular-puberulous, the single stalk cell very small. *Calyx* segments reflexed, lanceolate, the two anticous ones c. 3–4 × 1.5–2, three posticous ones slightly smaller, all green, glandular-puberulous. *Corolla* tube c. 6–7 mm long, invaginated, two lateral spurs c. 9–11 mm long, directed straight down or down and slightly out and then describing a broad V, with a patch of dark

sessile glands within near the tips; limb c. 25×22 – 25 mm, anticous lobe c. 11 – 12×15 – 16 , lateral lobes c. 7 – 9×9 – 11 mm, posticous lobes c. 5 – 7×6 – 7 , all subrotund, all "salmon-pink" to "scarlet", "brick-red" or "crimson-lake", sparsely glandular-puberulous outside, usually glabrous inside, occasionally with a patch of dark short-stalked glands centrally placed on face of the slightly raised palate, the "window" concave, yellow and maroon. *Stamens* projecting forward; anthers c. 1 mm long, cohering strongly. *Ovary* c. 2×1.75 mm, deltoid in outline, ovules many in each loculus; style c. 2 mm long, stigma capitate. *Capsules* 9 – 17×5 – 6 mm, oblanceolate in outline; seeds c. 1.75 mm long, broadly winged, ribbed. Fig. 4 a–d.



FIG. 4.

Diascia capsularis (NBG 833/77); a, corolla, front view ($\times 2.5$); b, corolla, back view ($\times 2.5$); c, calyx ($\times 2.5$); d, stamens ($\times 7.5$). *D. barberae* (Hilliard & Burt 8832); e, corolla, front view ($\times 2.5$); f, corolla, back view ($\times 2.5$); g, calyx ($\times 2.5$); h, stamens ($\times 7$).

SELECTED CITATIONS

LESOTHO—2927 (Maseru): Morija, slopes of Makhoarane Mountain (-DA), 4/4/1913, *Dieterlen* 983 (BM, K, PRE, SAM); Maseru, 25/1/1951, *Compton* 22563 (NBG); Mafeteng distr., Mafeteng (-CC), 6000 ft., 23/12/1933, *Gerstner* 230 (PRE).

ORANGE FREE STATE—2926 (Bloemfontein): Thaba Nchu Mountain (-BB), 22/1/1982, *Matthews* 841 (NBG, NU); Dewetsdorp (-DA), 13/4/1950, *Steyn* 943 (NBG).

—2927 (Maseru): Near Ladybrand, Vinies (-AB), 3/1917, *Page* s.n. (BOL); Wepener (-CA), c. 5000 ft., 29/1/1945, *Acocks* 11173 (PRE).

—3025 (Colesberg): Philippolis distr., near Spioenkop (-BC), c. 5050 ft., 8/9/1927, *Smith* 4474 (PRE).

CAPE—3026 (Aliwal North): Rouxville distr., 14 km from Aliwal North on road to Bethulie (-DA), 3/3/1981, *Herman* 438 (PRE); Near Aliwal North, Elandshoek, 4700 ft., 5/1903, *F. Bolus* 10497 (BOL, GRA, K); Ruigtefontein, 4/1929, *Thode* A1832 (K, NH, PRE); Albert div., Burghersdorp (-CD), 2/1898, *Guthrie* 4910 (BOL); Sterkstroom distr., Stormberg, Penhoek Pass (-BC), 12/12/1942, *Barker* 2199 (BOL, NBG); 16 miles W of Dordrecht (-BA), 13/4/1957, *Theron* 2184 (K, PRE).

—3124 (Hanover): Near Naauw Poort (-BB), 2/1896, *Denoon* 60 (BOL); North of Compassberg (-DA), 4/2/1976, *Wisura* 3589 (NBG); Wapadsberg, Mountain Horse Station (-DD), 3/1813, *Burchell* 2820 (K); Lootsberg Pass (-DC), c. 5500 ft., 28/3/1947, *Acocks* 13544 (K, PRE).

—3126 (Queenstown): Bamboesberg (-AC), 1/6/1981, *Van Schoor* s.n. (NBG).

—3224 (Graaff Reinet): S face of Cave Mountain (-BC), 3500 ft., 24/5/1865, *Bolus* 58 (BOL, K); Farm Rheboksberg, 4/3/1930, *Galpin* 10004 (K, PRE); Koudeveldt Berg (-AA), 4000 ft., 3/1878, *Tyson* s.n. (BOL, BM); Zuurpoort, farm Doornbosch, 3/6/1976, *Wisura* 3585 (NBG).

—3225 (Somerset East): Cradock distr., Mountain Zebra Park (-BA), c. 4800 ft., 21/1/1969, *Muller* 630 (PRE); Tarkastad distr., Martha, 6330 ft., 20/4/1950, *Killick* 858 (PRE); Queenstown distr., Upper Zwart Kei, Mount Hope Farm, 5000 ft., 10/3/1900, *Galpin* 2676 (K, PRE); Somerset East distr., Boschberg (-DC), 3000 ft., *MacOwan* 2005 (GRA, PRE); Bruintjieshoogte (-CB), 19/5/1813, *Burchell* 3015 (K).

—3325 (Port Elizabeth): 1–12 miles N of Zuurberg Hotel (-BC), 2000–2500 ft., 25/4/1947, *Story* 2388.

—3326 (Grahamstown): 13 miles SW of Grahamstown (-BC), c. 1200 ft., 24/4/1947, *Acocks* 13622 (K, PRE); Alexandria distr., farm Spadona (-DA), 24/6/1931, *Galpin* 10753 (BOL, K, PRE); Bathurst distr., farm Hopewell, 7/7/1947, *Compton* 19822 (NBG); Stockenstroom div., Seymour (-DB), *Scott Elliot* 253 (E).

Diascia capsularis is widely distributed from the western parts of Lesotho and the south eastern and southern Orange Free State through the drier parts of the north east and eastern Cape as far east as Queenstown and the Fort Beaufort area and as far west as the Koudeveld Mountains west of Graaff Reinet and the Zuurberg north of Port Elizabeth at altitudes ranging from c. 180 to 1 800 m. It favours rocky places among grasses and shrubs, and appears to be more tolerant of dry conditions than any species save *D. integerrima*.

The more or less triangular leaves with a few sharp teeth nearly confined to the lower half of the margins give the species a characteristic facies. However, some forms of *D. integerrima* (specimens previously ascribed to

D. moltenensis and *Nemesia hastata*) strongly resemble *D. capsularis* in their vegetative parts (see further under *D. integerrima*). The two species may be distinguished by differences in corolla form: in *D. capsularis*, the corolla tube is invaginated, the two spurs are almost straight and curve away from each other, the palate is raised but there is no median keel, and the stamens project forward; in *D. integerrima* the corolla tube is not invaginated, the two spurs are strongly incurved at the extreme tips and lie close together and almost parallel, a strongly raised median keel lies between the entrances to the spurs, and the stamens stand erect with the anthers hidden inside the concave window.

The palate in *D. capsularis* is usually devoid of dark glands, but glands have been recorded on specimens over virtually the whole of the geographical range of the species. We are indebted to Mr. G. C. Matthews, Kirstenbosch, for flowers in spirit of two collections of *D. capsularis*: *Matthews 841* from Thaba Nchu Mountain in the south eastern Orange Free State has no glands on the palate, *Matthews 720* from near Grahamstown has dark short-stalked glands on the palate, reminiscent of the yellow glands on the keel in *D. rigescens*. Pressure has distorted the glands on most dried specimens, and it is not clear if the glands in *D. capsularis* are always short-stalked.

6. *Diascia barberae* Hook.f. in Bot. Mag. t. 5933 (1871); Wettstein in Engl. & Prantl., Pflanzenfam. 4 3B: 44 f.21 L (1897); Hiern in Thiselton-Dyer, Fl. Cap. 4 (2): 156 (1904). Type: Bot Mag. tab. 5933; no specimen preserved.

Stoloniferous perennial herb, stems many from the crown, tufted, branching, up to 450 mm long, c. 2 mm diam., erect or decumbent, glabrous or nearly so becoming glandular-puberulous on the inflorescence branches. *Leaves* glabrous, mostly 10–25 × 5–20 mm (ratio 1–2:1), diminishing in size upwards, ovate or ovate-lanceolate, apex subacute, base somewhat rounded to almost truncate, margins serrate; petiole 1–5 mm long, the uppermost leaves nearly sessile. *Flowers* several to many in lax terminal racemes; bracts up to 6 × 4 mm, lanceolate, acute; pedicels mostly 11–30 mm long, ascending at an angle of c. 45°, glandular-puberulous, hairs scarcely 0.25 mm long, or sometimes wanting. *Calyx* segments lanceolate, two anticus ones c. 4 × 1.5 mm, three posticus ones slightly smaller, all green, thinly glandular-pilose or rarely glabrous. *Corolla* tube c. 5 mm long, shortly invaginated, two lateral spurs c. 7–8 mm long, directed out and down, tips slightly incurved, with a patch of dark sessile glands within; limb c. 23–27 × 20–24 mm, anticus lobe broadly ovate or subrotund, c. 11–13 × 13–16 mm, two lateral lobes ovate-oblong, c. 5–8 × 6–8 mm, two posticus lobes oblong-ovate, c. 4–7 × 4–6 mm, all lobes rose-pink, white patch at base of anticus lobe outside, all lobes thinly glandular-pilose outside, inside usually with two lateral

patches of dark gland dots on the outer face of the palate and extending briefly onto the anticus lobe, very rarely these two patches linking up (see below); "window" shallowly concave, the yellow portion fringed and blotched dark maroon. *Stamens* projecting forward from the base of the boss produced by the invaginated corolla tube; filaments c. 3.5 mm long, glandular-puberulous in upper part; anthers c. 0.5 mm long, cohering strongly, pollen yellow. *Ovary* c. 2×1.5 mm, deltoid in outline, ovules many in each loculus; style c. 2.5 mm long; stigma capitate, emerging from the centre of the anthers. *Capsule* c. $9-14 \times 5$ mm, urceolate; seeds c. 1.5 mm long, winged and ribbed. Fig. 4 e-h.

CITATIONS

NATAL—2929 (Underberg): Garden Castle Forest Reserve, valley beyond Forster's house (-CB), c. 1 980 m, 12/11/1980 [flowered later in cultivation], *Hilliard & Burt* 13470 (E, NU); Garden Castle Forest Reserve, Mlambonja valley, path to Mashai Pass (-CA), 2 195–2 285 m, 8/1/1982, *Hilliard & Burt* 15030 (E, NU).

LESOTHO—2828 (Bethlehem): Butha Buthe—Leribe distr., between Matsuka and Khube Rivers (-CC), 9200 ft., 13/1/1955, *Coetsee* 537 (PRE); Maseru distr., Lehaha-la-Sekhonyana (-AD), 9100 ft., 31/12/1946, *Jacot Guillarmod* 250 (PRE).

—2929 (Underberg): Mokhotlong distr., Mokhotlong (-AC), 3/1949, *Jacot Guillarmod* 1178 (PRE); Phutha, 10 000 ft., 26/2/1949, *Compton* 21574 (NBG); Sani Top (-CB), c. 2 900 m, 16/1/76, *Hilliard & Burt* 8832 (E, K, MO, NU, PRE); ibidem, 31/12/1973, *Hilliard* 5406 (E, NU); Qachas Nek distr., Machaba Peak (-CC), 21/3/1936, *Galpin* 13903 (BOL, K, PRE); Sehlabathebe National Park, c. 2 325 m, 16/2/1976, *Beverley* 511 (PRE); Quthing distr., Lake Letsie, 2 400 m, 11/12/1977, *Killick* 4393 (PRE).

Diascia barberae favours wet gravelly or silty places among rocks in the boulder beds of streams, in seepage areas, or on streamside banks, between c. 1 980 and 3 000 m. Herbarium records are scanty, but it appears to be widely distributed in the mountains of Lesotho, and has twice been found in stream valleys in the southern Natal Drakensberg.

When J. D. Hooker described *Diascia barberae* he wrote "The Royal Gardens are indebted to their highly-valued correspondent, Mrs. Barber, for seeds of this plant, which arrived in 1870, and flowered in July of the present year" [1871]. Mrs. Barber lived for many years in the eastern Cape and it has been tacitly accepted that *D. barberae* is an eastern Cape plant. The distinguishing characters of *D. barberae* are clearly shown in Hooker's plate, which is the type of the name: the shape of the spurs, the two lateral patches of gland dots on the palate, the four equal stamens, the shape of the window. All the wild material matching the plate has been collected in Lesotho and the southern Natal Drakensberg. Mr. N. Hepper consulted the Kew archives for us and found that Mrs. Barber wrote to Kew on 15 November 1869 "my brother has just sent a small packet of seeds from Basutoland for

you and I shall forward them at the same time as I do this letter". We correlate this letter with eighteen packets of seed from Mrs. Barber, marked Basutoland, accessioned in the Garden on 12 May 1870. Col. Bowker, Mrs. Barber's brother, was Agent in Basutoland for the Governor at the Cape between 1868 and 1870, and lived in Maseru.

The two patches of glands on the palate are usually well-separated, but occasionally they can partially link up: *Matthews 1003*, NU (Lesotho 2928 CA between Mantsonyana and Likalaneng, 2 000 m) may have the patches either well-separated or linked by a few glands while in *Matthews 881*, NBG (Lesotho 2928 BB, $\pm$ 23 km from Mothae turnoff towards Masoleng, 2 750 m) the patches have partially coalesced. Mr. Matthews sent flowers in spirit as well as dried specimens, and there is no doubt about the identity of his 881.

7. *Diascia tugelensis* Hilliard & Burt in Notes R. bot. Gdn Edinb. **41**: 313 (1983). Type: Natal, Bergville distr., 2828 DB, Royal Natal National Park, Tugela gorge, Sentinel gully, 1 800 m, 6/2/1982 [sterile; flowered in cult. 5 1982], *Hilliard & Burt 15455* (E, holo.; NU, iso.).

Stoloniferous perennial herb, stems many from the crown, tufted, branching, up to c. 450 mm long, c. 2 mm diam., decumbent, rooting near the base, glabrous, becoming glandular-puberulous only on the inflorescence branches. *Leaves* mostly 8–25 $\times$ 6–15 mm (ratio 1–1.5:1), ovate, apex subacute, base subcordate, margins serrate, glabrous; petioles 3–10 mm long. *Flowers* few to several in lax terminal racemes; bracts up to 7 $\times$ 4 mm, lanceolate, margins serrate, a few gland-tipped hairs often present; pedicels c. 25–50 mm long, spreading at an angle of c. 90°–45°, glandular-puberulous, hairs scarcely 0.25 mm long. *Calyx* segments lanceolate, reflexed, two anticus ones 3–4 $\times$ 1.5–1.75 mm, three posticus ones slightly smaller, all green, glandular-puberulous. *Corolla* tube c. 5–6 mm long, invaginated, two lateral spurs 5–7 mm long, curved forward, with a patch of dark globular sessile glands within at the swollen tips; limb c. 20–23 $\times$ 18–20 mm, anticus lobe c. 9–11 $\times$ 10–11 mm, two lateral lobes 5.5–7 $\times$ 5–7 mm, two posticus lobes 4–5 $\times$ 5 mm, all lobes suborbicular, rose-pink sparsely glandular-pilose outside, palate without dark sessile gland dots, deeply channelled down the back and along the floor of the tube to accommodate the filaments, the "window" concave, c. 1.5 mm deep, yellow and maroon. *Stamens* projecting forward from the base of the boss produced by the invaginated corolla tube; filaments c. 4 mm long, glandular-puberulous; anthers c. 1.25 mm long, cohering strongly, pollen yellow. *Ovary* c. 1.5–2 $\times$ 1–1.5 mm, deltoid in outline, ovules many in each loculus; style 2.75–3 mm long; stigma capitate, lying between the anthers. *Capsule* (5–)9–14 $\times$ 4–5

mm, oblanceolate in outline; seeds 1.25 mm long, narrowly winged, not ridged. Fig. 5 a-d.

CITATIONS

ORANGE FREE STATE—2828 (Bethlehem): Witzieshoek, The Sentinel (-DB), 11000 ft., 15/4/1951, *Steyn 1080* (NBG); Mont-aux-Sources, 8000 ft., 4/1913, *Dyke 5452* (NBG); The Witches (north side) near The Sentinel, 8200 ft., 3/3/1976, *Rourke 1520* (NBG); *ibidem*, 14/1/1982, *Matthews 746* (NBG); N W side of The Sentinel, 15/1/1982, *Matthews 760* (NBG, NU); W-facing slopes of The Sentinel, 14/1/1982, *Roux 1090* (NU).

NATAL—2828 (Bethlehem): Bergville distr., Mont-aux-Sources, near hut (-DD), 9900 ft., 19/3/1946, *Schelpé 1340* (NH, NU); National Park, 2/1927, *Prescott-Decie s.n.* (BOL).

Diascia tugelensis has been recorded from the Drakensberg near the sources of the Tugela river, between c. 1 800 and 3 000 m above sea level. At higher altitudes, the plants grow in the crevices and along the foot of wet basalt cliffs, but Schelpé recorded it near rock flushes and along stream-banks on the bleak plateau below the summit of Mont-aux-Sources, while we found it in wet gravel in the rocky streambed of Sentinel gully at its confluence with the gorge of the Tugela.

Diascia tugelensis is allied to *D. vigilis* with which it is sympatric, and they may occupy similar habitats, but living plants are easily distinguished because the corolla of *D. tugelensis* lacks dark sessile glands on the palate, which is channelled, so that the filaments project forward along this groove; in *D. vigilis* the palate is raised, not grooved, and a patch of dark glands lies on the face of this hump. Also, in *D. tugelensis* the corolla tube is sufficiently invaginated to push the calyx lobes back into the reflexed position; in *D. vigilis*, the calyx lobes lie flat against the back of the corolla because the tube is scarcely invaginated. In no species other than *D. tugelensis* have we seen spurs with remarkably swollen tips. Another peculiar character is its susceptibility to infestation by red mites, and the damage they do can often be detected in dried specimens. The rather small leaves, long nude peduncles, and well-spaced flowers on long spreading pedicels impart a characteristic facies.

8. *Diascia vigilis* Hilliard & Burtt in Notes R. bot. Gdn Edinb. **41**: 313 (1983). Type: Orange Free State, Witzieshoek, road to The Sentinel, c. 2 440 m, 27/12/1975, *Hilliard & Burtt 8656* (E, holo.; K, MO, NU, PRE, iso.).

Stoloniferous perennial herb, stems many from the crown, tufted, branching, up to c. 500 mm long c. 2 mm diam., decumbent or suberect, often straggling, nearly glabrous to sparsely glandular-pilose, the hairs

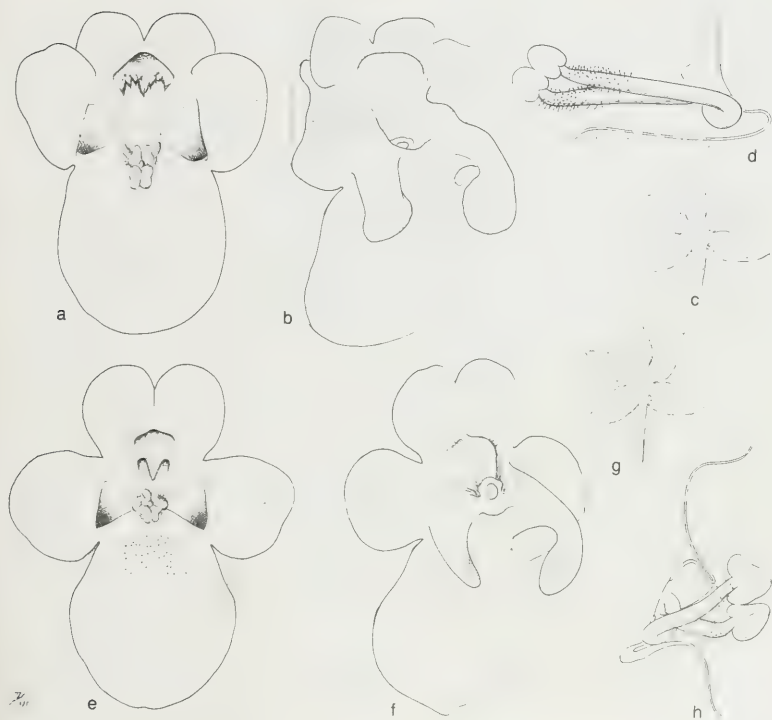


FIG. 5.

Diascia tugelensis (Hilliard & Burt 15455); a, corolla, front view ($\times 2.5$); b, corolla, back view ($\times 2.5$); c, calyx ($\times 2.5$); d, stamens ($\times 6$). *D. vigilis* (Hilliard & Burt 11957); e, corolla, front view ($\times 2.5$); f, corolla, back view ($\times 2.5$); g, calyx ($\times 2.5$); h, stamens ($\times 6$).

patent. *Leaves* either glabrous or thinly glandular-pilose, mostly $15\text{--}50 \times 10\text{--}35$ mm (ratio 1–2:1), ovate or ovate-lanceolate, apex subacute, base $\pm$ rounded, margins sharply serrate, petiole 2–10 mm long, glabrous or glandular-hairy. *Flowers* few to many in lax terminal racemes; bracts up to 12×10 mm, but mostly much smaller, ovate-lanceolate, very acute to shortly acuminate, thinly glandular-pilose; pedicels mostly 14–25 mm long, sharply ascending, thinly glandular-pilose, the hairs c. 0.5 mm long. *Calyx* segments spreading, lanceolate, two anticus segments $3.5\text{--}5 \times 1.75\text{--}2$ mm, three posticus ones slightly smaller, all green with spreading gland-tipped hairs

outside. *Corolla* tube c. 5–6 mm long, scarcely invaginated, two lateral spurs c. (6–)7–9 mm long, curved out, down and slightly forward, with a patch of dark sessile glands within, limb c. 22–28 × 17–23 mm, anticus lobe elliptic-ovate, 10–13 × 11–15 mm, two lateral lobes subrotund or elliptic-oblong, 5–7 × 7–8,5 mm, two posticus lobes subrotund or elliptic-oblong, 4,5–7 × 4,5–6, all rose-pink, sparsely glandular-pilose outside, inside with a broad inverted V of dark sessile glands centrally placed on the raised palate, very rarely these glands wanting, the “window” concave, c. 1–1,5 mm deep, yellow and maroon. *Stamens* projecting forward; filaments 3 mm long, sparsely glandular-pubescent in the upper half, anthers 1–1,5 mm long, cohering strongly, pollen yellow. *Ovary* 1,5–2 × 1–1,25 mm, deltoid in outline; ovules many in each loculus; style c. 2 mm long, stigma capitate, emerging from the centre of the anthers. *Capsules* (6–)7–11 mm long, urceolate; seeds 1,25 mm long, curved, winged and ridged. Fig. 5 e–h.

SELECTED CITATIONS

ORANGE FREE STATE—2828 (Bethlehem): Witzieshoek, Caledon Pass (-DB), 2 400 m, 12/1895, *Thode* 40 (BOL, K); North slopes of The Sentinel near chain ladder, 9000 ft., 3/3/1976, *Rourke* 1523 (K, NBG, PRE); NW slopes of The Pudding, 8000 ft., *Rourke* 1536 (K, NBG); Footpath to base of Sentinel, 9200 ft., 2/2/1982, *Stewart & Manning* 2244 (E, NU); Between The Pudding and The Dome, 16/1/1982, *Matthews* 748 (NBG); Between The Sentinel and chain ladder, 15/1/1982, *Matthews* 759 (NBG); ibidem, 14/1/1982, *Roux* 1106 (E, NU).

—2829 (Harrismith): Platberg (-CA), *Sankey* 198 (K); ibidem, 9/1981, *Roux* 1255 (E, NU).

NATAL—2828 (Bethlehem): Bergville distr., Royal Natal National Park, path to Tugela gorge (-DB), c. 1 800 m, 23/3/1981, *Hilliard & Burt* 14450 and 14451 (E, NU); ibidem, 20/2/1928, *Lewis Grant* 3620 (BOL, GRA, K, PRE); ibidem, Devil's Hoek, c. 5800 ft., 13/2/1928, *Galpin* 10175 (K, PRE); ibidem, Mahai Valley, 26/4/1951, *Vogel* 272 (PRE); The Cavern, 5800 ft., 1/1956, *Pascoe* 2 (NU).

—2829 (Harrismith): Cathedral Peak, Umlambonja Valley (-CC), 5600 ft., 8/1/1965, *Schelte* 7186 (BOL); ibidem, Umhlwasine River, 4000 ft., 12/1949, *Slinger* 9 (NH, NU); ibidem, MnWeni area, 7000 ft., 7/1973, *Esterhuysen* 21675 (BOL, PRE); ibidem, stream tributary to the Tsekeseke, 2 100 m, 18/1/1983, *Hilliard & Burt* 16285 (E, NU).

LESOTHO—2828 (Bethlehem): Leribe distr., Malavaneng (-CC), 5–6000 ft., 2/1913, *Dieterlen* 874 (PRE, SAM).

Diascia vigilis derives its epithet from The Sentinel (lat. *vigil*), the huge basalt block on the northern end of The Amphitheatre wall that towers over Royal Natal National Park, and many of the collections of this species come from the much-visited valley of the Tugela river and its tributaries below The Amphitheatre and from the path leading past The Sentinel to Mont-aux-Sources, but there are also several records from the Cathedral Peak area further south, and one from Leribe in western Lesotho. There are also two records from Platberg, the great basalt-capped mountain lying on top of the

low Drakensberg at Harrismith in the north eastern Orange Free State, just north of Mont-aux-Sources and the high Drakensberg massif. Mr. J. P. Roux's specimen from Platberg, which was supplemented with flowers in spirit, differs very slightly from specimens from the high Drakensberg: the spurs are a little shorter (as though the tips had atrophied) and there are no gland dots on the palate; however, Sankey 198, also from Platberg, has spurs of normal length and an ill-developed patch of glands on the palate.

At lower altitudes, *D. vigilis* may be found on damp banks on the edges of forest patches and in the shelter of large rocks along the margins of small mountain streams; at higher altitudes it grows in the shelter of moist cliffs, among big rocks. It forms large tangled clumps, and sometimes scrambles up through bushes. There is remarkable variation in the degree of hairiness of the stems and leaves, and nearly glabrous and pilose forms may grow intermingled.

Diascia fetcaniensis, from the southern end of the Drakensberg, shows similar variation in hairiness. Care is needed to distinguish the two species, but in *D. vigilis* the calyx lies flat against the back of the corolla because the corolla tube is scarcely invaginated (it is bent in then out again, like a half-turned glove); in *D. fetcaniensis* the corolla tube is strongly invaginated, so that the calyx segments are reflexed. This distinction is not easy to detect in dried material unless the corollas have been carefully pressed, but the shape of the window differs in the two species (see Figs 5 and 6) and the filaments are glandular-pubescent in *D. vigilis*, not glandular-pilose.

Diascia vigilis is frequently misidentified in herbaria as *D. barberae*, but that species can be distinguished by the two lateral patches of gland dots on the palate and the more deeply invaginated corolla tube, which forces the calyx segments to reflex.

9. *Diascia* sp.

Perennial herb, stems many from the crown, tufted, simple, up to c. 300 mm long, 2 mm diam., probably weakly erect, glabrous. *Leaves* c. 11–16 × 7–14 mm (ratio c. 1:1), ovate, base ± cordate, apex acute to obtuse, margins serrate, whole leaf glabrous; petioles 1–3 mm long. *Flowers* several to many in a lax terminal raceme; bracts up to 8 × 4 mm, lanceolate, acuminate, glandular-pubescent; pedicels c. 13–20 mm long, filiform, ascending at an angle of c. 45°, they and the axis of the inflorescence glandular-pubescent, hairs patent, less than 0.25 mm long. *Calyx* segments lanceolate, two anticus ones 4–5 × 1.5 mm, three posticus ones slightly smaller, glandular-pubescent. *Corolla* tube c. 4 mm long, possibly scarcely invaginated, two lateral spurs c. 4 mm long, probably directed downwards and ± straight, tips with dark sessile glands within; limb c. 13–15 × 12–

13 mm, anticus lobe c. $6-8 \times 7-9$ mm, lateral lobes c. 5×5 mm, posticus lobes c. $2,5 \times 3$ mm, all subrotund, pink, with scattered glandular hairs outside, glabrous inside except for a patch of dark sessile glands centrally placed on the palate; "window" shallowly concave, yellow. *Stamens* with filaments 2 mm long, glandular-pubescent; anthers 0,75 mm long, cohering. *Ovary* $1,5 \times 1$ mm, deltoid in outline; style 1,5 mm long, stigma capitate, lying between the anthers. *Capsules* not seen.

CITATION

TRANSKEI—3127 (Lady Frere): Engcobo distr., hills near Engcobo (-DB), 13/10/1961, *Esterhuysen* 29250 (BOL).

This plant is in the general affinity of *D. fetcaniensis* and *D. stachyoides*, from which it differs at least in indumentum and in the shallow window; *D. barberae* has similar short glandular hairs on the pedicels, but in that species the glands on the palate are in two discrete patches laterally placed, and the whole facies is different. Formal description must wait upon further collections, including flowers in spirit.

GROUP 3

10. *Diascia stricta* Hilliard & Burt in Notes R. bot. Gdn Edinb. **41**: 313 (1983). Type: E Cape, 3027 DC, Barkly East distr., Witteberg, river below "Pitlochrie", c. 1 770 m, 4/12/1981, *Hilliard & Burt* 14705 (E, holo.; NU, iso.).

Rhizomatous perennial herb, stems several from the crown, tufted, simple, or sparingly branched, up to 500 mm long, c. 2 mm diam., glandular-pilose, the hairs patent. *Leaves* often sharply ascending, mostly $10-15 \times 4-8$ mm, (ratio c. 2:1), diminishing in size upwards, ovate-lanceolate, apex subacute, base subcordate, margins serrate particularly in lower half, both surfaces glandular-pilose; petioles 1-2 mm long, uppermost leaves almost sessile. *Flowers* many in crowded terminal racemes or panicles; bracts up to 5×4 mm, lanceolate, acute; pedicels c. 10-15 mm long, ascending at an angle of c. 45° , nearly glabrous to sparsely glandular-pilose, hairs c. 0,25-0,5 mm long. *Calyx* segments lanceolate, two anticus ones c. $2-2,5 \times 1-1,25$ mm, three posticus ones slightly smaller, all green, glabrous to glandular-pilose only in lower half. *Corolla* tube 2,5-3 mm long, invaginated, two lateral spurs c. 4 mm long, strongly curved forward, tips with dark globular sessile glands within, limb c. $15-20 \times 12-15$ mm, anticus lobe subrotund, c. $8-9 \times 8-11$ mm, two lateral lobes oblong-ovate, c. $3-4 \times 5$ mm, two posticus lobes oblong-ovate, c. $2,5-3 \times 3-4$ mm, all lobes rose-pink, thinly glandular-pilose outside, without dark sessile glands

on upper surfaces of lobes; palate slightly raised with two channels running back down the floor of the corolla tube in which the filaments lie; "window" deeply concave, drawn out into a short cone c. 1–2 mm deep, yellow and maroon. *Stamens* projecting forward from the base of the boss produced by the invaginated corolla tube; filaments c. 2,75 mm long, shaggy with long delicate gland-tipped hairs; anthers c. 0,75 mm long, cohering strongly, pollen yellow. *Ovary* c. $1,25 \times 1$ mm, deltoid in outline, ovules many in each loculus; style 2,25 mm long, stigma capitate, emerging from the centre of the anthers. *Capsule* c. $5-8 \times 3-4$ mm, lanceolate in outline; seeds c. 1,25 mm long, narrowly winged, ribbed. Fig. 6 a–d.

CITATIONS

CAPE—3025 (Colesberg): Colesberg distr., Joubert (-CA), 1/1925, *Thode* A502 p.p. (PRE).

—3027 (Lady Grey): Barkly East distr., between Naude's Nek and Ben Mcdhui (-DB), 8000–8500 ft., 21/1/1982, *Matthews* 842 (NBG, NU); ibidem, 19/1/1982, *Matthews* 203 (NBG); Ben Mcdhui, c. 2 560 m, 3/2/1983, *Hilliard & Burt* 16374 (E, NU).

—3028 (Matatiele): Maclear distr., southern side of Naude's Nek Pass (-CA), 8000 ft., 19/1/1982, *Matthews* 802 (NBG, NU); Barkly East distr., Rhodes to Naude's Nek (-CA/-CC), 13/2/1983, *Hilliard & Burt* 16589 (E, NU); Klopershoek Valley NE of Rhodes (-CA), c. 2 070–2 200 m, 14/2/1983, *Hilliard & Burt* 16631 (E, NU).

Diascia stricta is known from a limited area of the north eastern Cape, from about Colesberg (S 30° 42' E 25° 10') to the Cape Drakensberg and Witteberg (c. S 30° 40' E 28°). The stems of the initial material that we saw seemed to be rather stiffly erect, and suggested the trivial name; however, subsequent field work has shown that the plants may have decumbent and rather straggling stems particularly when they grow up through grass tufts or bushes. The species is found on mountain slopes and tops from c. 2 000 to 2 600 m above sea level, sometimes on streambanks or in drainage lines, sometimes in montane scrub where the soil is usually moist.

Diascia stricta is easily recognised by its small ovate-lanceolate leaves (*D. integerrima* may have similar leaves, but they are always glabrous, not hairy). It can be distinguished from its close ally, *D. fetcaniensis*, not only by the leaves (mostly 4–8 mm broad, not 15–25 mm), but also by the smaller flowers (limb c. 15–20 mm long, not 20–24 mm) and the lack of any dark gland dots on the palate (not a centrally placed patch that is only very rarely wanting).

11. *Diascia fetcaniensis* Hilliard & Burt, species nova; *D. stachyoidei* Hiern affinis sed calcaribus valde introrsum curvatis (nec extrorsum deinde deorsum, apicibus ipsis leviter incurvis), fenestra conica basi latiore (4–5 mm, nec 2,5–3 mm), filamentis longioribus (3–4 mm, nec 2,5 mm) distinguitur.

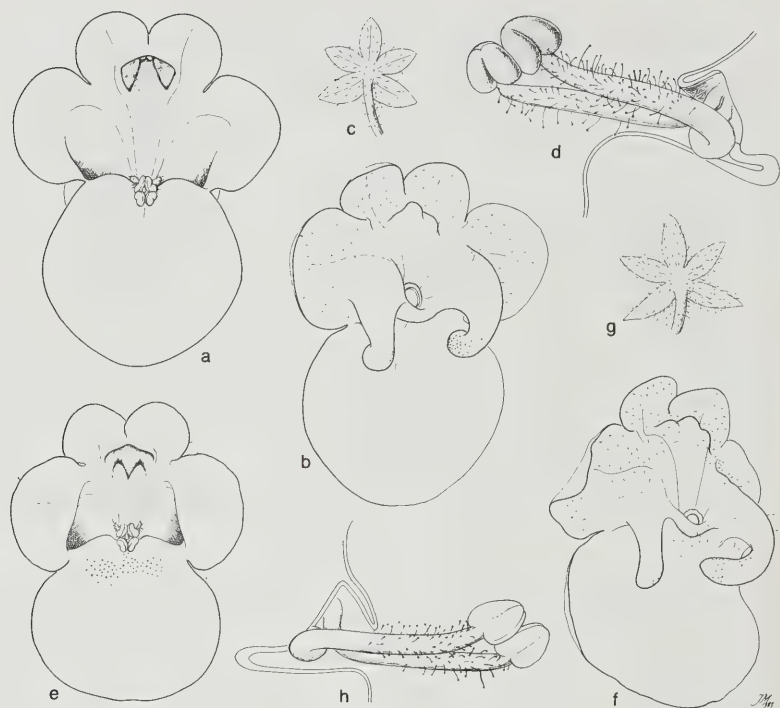


FIG. 6.

Diascia stricta (Hilliard & Burt 16589); a, corolla, front view ($\times 3,5$); b, corolla, back view ($\times 3,5$); c, calyx ($\times 2,5$); d, stamens ($\times 15$). *D. fetcaniensis* (Hilliard & Burt 12318); e, corolla, front view ($\times 2,5$); f, corolla, back view ($\times 2,5$); g, calyx ($\times 2,5$); h, stamens ($\times 10$).

Herba perennis, stolonifera; caules e summo caudice numerosi, caespitosi, ramosi, usque ad 400 mm longi, c. 2 mm diam., decumbentes vel suberecti, pilis mollibus patentibus glandulosis praediti. *Folia* plerumque $15-24 \times 15-25$ mm, ratione 1-1,5:1, ovata, basi $\pm$ cordata, apice acuto vel rotundato, marginibus serratis, utrinque pilis longis glandulosis patentibus induta vel pilis parvis vel absentibus; petioli 1-7 mm longi, glanduloso-pilosi vel glabri. *Flores* plures vel numerosi in racemos laxos terminales dispositi; bracteae plerumque 7×7 mm usque, a foliis bene distinctae vel interdum infima foliaceae, ovata-cordatae, glandulosae; pedicelli 15-25 mm longi,

glanduloso-pilosi, pilis 0,5 mm longis. *Calyx* 5-partitus; segmenta lanceolata, reflexa, 2 antica c. $3-6 \times 1-1,5$ mm, 3 postica paulo minora, omnia viridia, extra patenter glanduloso-pilosa. *Corolla* tubo c. 4-5 mm longo valde invaginato; calcara 5-7 mm longa, valde prorsum curvata, intus ad apices glandulis fuscis praediti; limbus c. $20-24 \times 15-21$ mm, roseus, extra parce glanduloso-pilosus, intus glandulis fuscis sessilibus in palato transverse dispositis, glandulis raro absentibus; fenestra concava conum 1,5-2,5 mm altum basi 4-5 mm diam. formans. *Stamina* 4, aequalia, porrecta; filamenta 3-4 mm longa, glanduloso-pilosa; antherae c. 0.75-1 mm longae, inter se valde cohaerentes, polline luteo. *Ovarium* 1,5-2 $\times$ 1-1,5 mm; ovula in quoque loculo numerosa; stylus 2-3 mm longus, stigmatē capitato inter antheras posito. *Capsula* 7-12 $\times$ 3,5-4 mm, urceolata; semina 1,5 mm longa, alata et costata.

Type: E Cape, 3127 BB, Barkly East distr., Fetcani Pass, c. 2 285-2 300 m, 22/1/1979, Hilliard & Burt 12318 (E, holo.; NU, iso.).

Stoloniferous perennial herb, stems many from the crown, tufted, branching, up to c. 400 mm long, c. 2 mm diam., decumbent or suberect, softly pilose, hairs patent, gland-tipped. *Leaves* mostly 15-24 $\times$ 15-25 mm, rarely much smaller or much larger, ratio 1-1,5:1, ovate, base $\pm$ cordate, apex obtuse to rounded, margins serrate, both surfaces with long patent gland-tipped hairs or hairs sparse or wanting; petioles 1-7 mm long, glandular-pilose to glabrous. *Flowers* several to many in lax terminal racemes; bracts mostly up to 7 $\times$ 7 mm, usually sharply differentiated from the leaves, the lowermost occasionally leaf-like, ovate-cordate, glandular; pedicels 15-25 mm long, ascending at angle of c. 45°-90°, glandular-pilose, hairs mostly 0,5 mm long. *Calyx* segments lanceolate, reflexed, two anticous ones c. $3-6 \times 1-1,5$ mm, three posticous ones slightly smaller, all green, pilose outside with patent gland-tipped hairs. *Corolla* tube c. 4-5 mm long, strongly invaginated, two lateral spurs c. 5-7 mm long, strongly curved forward, with a patch of dark sessile glands within at the tips; limb c. $20-24 \times 15-21$ mm, anticous lobe broadly ovate, c. $10-14 \times 10-13$ mm, two lateral lobes subrotund, c. $5-6 \times 5,5-7$ mm, two posticous lobes subrotund, c. $5-6 \times 4-5$ mm, all lobes rose-pink, sparsely glandular-pilose outside, inside usually with, rarely without, a transversely elongated central patch of dark sessile glands on the front of the palate, which is channelled down the back to accommodate the forward thrust of the invaginated corolla tube, the "window" concave, forming a small conical spur 1,5-2,5 mm deep, 4-5 mm across at the base, yellow and maroon. *Stamens* projecting forward from the base of the boss formed by the invaginated corolla tube: filaments 3-4 mm long, glandular-pilose; anthers c. 0.75-1 mm long, cohering strongly, pollen

yellow. Ovary $1.5-2 \times 1-1.5$ mm, deltoid in outline, ovules many in each loculus; style 2-3 mm long, stigma capitate, lying in the centre of the anthers. Capsule 7-12 $\times$ 3.5-4 mm, urceolate; seeds 1.5 mm long, curved, winged and ridged. Fig. 6 e-h.

CITATIONS

CAPE—3027 (Lady Grey): Barkly East distr., Ben Mcdhui (-DB), c. 9900 ft., 11/3/1904, *Galpin 6783* (PRE); ibidem, 8500 ft., 19/1/1982, *Matthews 804* (NBG); ibidem, c. 2560 m, 3/2/1983, *Hilliard & Burt 16375* (E, NU); ibidem, 19/1/1982, *Roux 1175* (NU); Between Ben Mcdhui and Naude's Nek, 19/1/1982, *Roux 1176* (NU); Naude's Nek summit, 18/1/1982, *Roux 1155* (NU).

—3028 (Matatiele): Maclear distr., Naude's Nek (-CA), c. 1980 m, 9/4/1966, *Hilliard 3935* (E, NU); Between Rhodes and Maclear at 51 and 54 km from Maclear (-CD), 5500 ft., 20/1/1982, *Matthews 809* (NBG); Near Elands Heights, 19/1/1982, *Roux 1190* (NBG); Pot River Berg, 5500 ft., 20/3/1904, *Galpin 6785* (BOL, GRA, K, NH, PRE); Tsitsa footpath, c. 7600 ft., 20/3/1904, *Galpin 6784* (BOL, GRA, K, NH, PRE).

—3127 (Lady Frere): Barkly Pass, Kraalberg (-BB), 7000 ft., *Rattray sub Galpin 7310* (PRE); Elliot distr., Bastervoetpad, c. 2 200 m, 15/2/1983, *Hilliard & Burt 16700* (E, NU); ibidem, 19/2/1983, *Batten 647* (E, NU); ibidem, 7500 ft., 21/1/1983, *Matthews 828* (NBG), 827 (NBG, NU), 824 (NBG).

LESOTHO—3028 (Matatiele): Quthing distr., Buffalo River waterfall (-CA), c. 8200 ft., 14/3/1904, *Galpin 6781* (K, PRE).

TRANSKEI—3028 (Matatiele): Ongeluk's Nek, $\pm$ 4 km from Lesotho border post (-AD), 2 000 m, 14/1/1983, *Matthews 917* (NBG); Qacha's Nek, $\pm$ 1 km from border post (-BA), 1 750 m, 16/1/1983, *Matthews 950* (NBG).

Diascia fetcaniensis has been recorded from Qacha's Nek and Ongeluk's Nek on the Transkei-Lesotho border, Ben Mcdhui, the Buffalo River waterfall and Naude's Nek on the Cape-Lesotho border along the Cape Drakensberg and its foothills to about Barkly Pass, at altitudes ranging from 1 675 to 3 000 m. It favours damp places at the foot of cliffs or grassy banks along streams, sometimes heavily shaded by trees and bushes; or it may grow in the shelter of large grass tussocks on the more exposed tops of the mountains.

Diascia stachyoides and *D. stricta* are the two species that are more or less sympatric with *D. fetcaniensis* and with which it is most likely to be confused. It can be distinguished from *D. stachyoides* by its differently shaped lateral spurs (strongly curved inwards, not directed out then down, incurved at the tips only), by the width of the window cone (4-5 mm at the base, not 2.25-3 mm) and by the length of the filaments (3-4 mm, not 2.5 mm). The characters that distinguish *D. stricta* are enumerated under that species.

12. ***Diascia stachyoides*** Hiern in Thiselton-Dyer, Fl. Cap. 4 (2): 160 (1904). Type: Cape, Queenstown distr., Hangklip Mountain, base of cliff on summit, 6300 ft., March 1893, *Galpin 1520* (K, holo.; BOL, GRA, iso.).

D. flanaganii Hiern in Thiselton-Dyer, Fl. Cap. 4 (2): 161 (1904). Type: Cape, between Elliot and Maclear, *Flanagan s.n.* (K).

Stoloniferous perennial herb, stems many from the crown, tufted, branching, up to c. 400 mm long, 2 mm diam., decumbent or suberect, softly glandular-pilose, hairs patent. *Leaves* mostly 10–25 × 8–25 mm in the proportion 1–1.5:1, diminishing in size upwards, ovate, base ± cordate, apex obtuse to rounded, margins serrate, both surfaces glandular-pilose; petioles 1–3.5 mm long, glandular-pilose. *Flowers* several to many in lax terminal racemes, bracts up to 10 × 12 mm, many of them leaf-like, ovate-cordate, glandular-pilose; pedicels c. 14–26 mm long, ascending at an angle of 45°–90°, filiform, glandular-pilose, hairs patent, mostly at least 0.5 mm long. *Calyx* segments lanceolate, reflexed, two anticus lobes 3–5 × 1.25–1.5 mm, three posticus lobes slightly smaller, all green, pilose outside with patent gland-tipped hairs. *Corolla* tube c. 4 mm long, strongly invaginated, two lateral spurs c. 4–7 mm long, directed out, then down, slightly incurved at the tips, tips with dark sessile glands within; limb c. 17–19 × 16–18 mm, anticus lobe 7.5–10 × 10–11 mm, subrotund, two lateral lobes c. 5 × 7 mm, subrotund, two posticus lobes c. 4 × 5.5 mm, subrotund; all lobes rose-pink, sparsely glandular-pilose outside, either glabrous inside or with a few dark sessile glands centrally placed on the palate, which has a double groove down the back to accommodate the filaments, the “window” deeply concave, forming a small hollow cone 1.5–3.75 mm long, 2.25–3 mm across at the base, yellow and maroon part mostly hidden within the cavity. *Stamens* projecting forward from the base of the boss formed by the invaginated corolla tube; filaments 2.5 mm long, glandular-pilose; anthers 0.75 mm long, cohering strongly, pollen yellow. *Ovary* 1.5–1.75 × 1–1.5 mm, deltoid in outline, ovules many in each loculus; style 1.5 mm long, stigma capitate, lying in the centre of the anthers. *Capsules* not seen. Fig. 7 a–d.

CITATIONS

CAPE—3126 (Queenstown): Hangklip Mountain (-DD), 1/1962, *Koopowitz s.n.* (PRE); ibidem, 6600 ft., 31/12/1962, *Roberts 2006* (PRE).

—3127 (Lady Frere): Barkly Pass (-BD), 1980 m. 29/11/1981, *Hilliard & Burt 14554* (E, NU)

LESOTHO—3028 (Matatiele): Qacha's Nek (-BA), 26/1/1938, *Fawkes 339* (PRE).

Diascia stachyoides has been recorded from only three localities in the north eastern Cape and nearby Lesotho. On Hangklip Mountain it is reported to grow at the base of the summit cliffs at an altitude of c. 1 950 m, while we found it in the shelter of large grass tussocks in a stream gully on Barkly Pass, at much the same altitude. These are precisely the habitats favoured

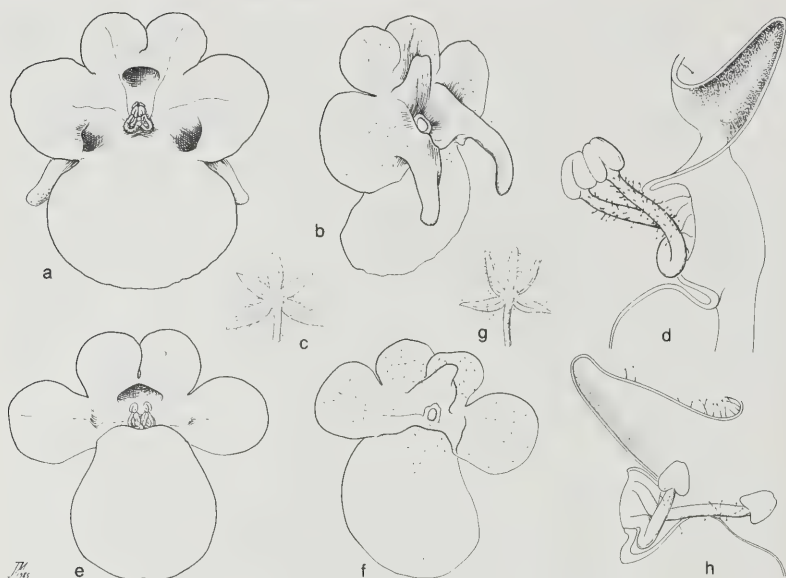


FIG. 7.

Diascia stachyoides (Hilliard & Burt 14554); a, corolla, front view ($\times 2.5$); b, corolla, back view ($\times 2.5$); c, calyx ($\times 2.5$); d, stamens, and cone in section ($\times 7.5$). *D. lilacina* (Hilliard & Burt 12297); e, corolla, front view ($\times 4$); f, corolla, back view ($\times 4$); g, calyx ($\times 4$); h, 2 stamens, cone and corolla base in section ($\times 10$).

by its close ally, *D. fetcaniensis*, which is known from the Cape Drakensberg and the nearby Witteberg and mountains in Lesotho.

Hiern described *D. flanaganii* as having "two obtuse spurs or pouches about $\frac{1}{10}$ " long". The type material at Kew is only a scrap of stem bearing buds, and it is clear that Hiern measured the tips of the infolded spurs, which are exactly 2 mm ($\frac{1}{10}$ "') long. The specimen has the same leaf-like bracts as *D. stachyoides*, no sessile glands on the palate, and resembles *D. stachyoides* in all other respects; we judge them to be conspecific.

The leafy inflorescence gives *D. stachyoides* an easily recognisable facies; only *D. lilacina* has a similar inflorescence, and that species is easily recognised by its much smaller lilac-coloured flowers without lateral spurs. The leaf-like bracts may be poorly developed in depauperate specimens of *D. stachyoides*, and then the species with which it is probably most easily confused is *D. fetcaniensis*, which has differently shaped spurs, a broader window cone, and longer filaments and style (see under *D. fetcaniensis*).

13. *Diascia lilacina* Hilliard & Burt in Notes R. bot. Gdn Edinb. **41**: 312 (1983). Type: Cape, 3127 A-B border, Barkly East—Elliot distr. boundary, Saalboom Nek south of Clifford, c. 2 100 m, 21/1/1979, Hilliard & Burt 12297 (E, holo.; NU, iso.).

Perennial herb, stems many from the crown, of indeterminate length, c. 2 mm diam., creeping, rooting, branching, glandular-pilose. *Leaves* c. 7–25 × 7–25 mm (ratio 1:1), diminishing in size upwards, ovate, apex obtuse, base cordate, margins serrate, both surfaces glandular-pilose; petiole c. 3 mm long, glandular-pilose. *Flowers* solitary in the upper leaf axils forming a long leafy raceme; pedicels filiform, c. 6–10 mm long, spreading, or reflexed in fruit, brownish-green, glandular-pilose, hairs at least 0.5 mm long. *Calyx* segments linear-lanceolate, two anticus lobes c. 2.5 × 0.75 mm, three posticus ones slightly smaller, all green, glandular-pilose. *Corolla* tube c. 2 mm long, not invaginated, with two very shallow pouches at base of lateral corolla lobes, the posticus yellow and maroon “window” produced into a hollow cone c. 2.5–3 mm long; limb c. 12 × 11 mm, anticus lobe oblong-elliptic, c. 8 × 6 mm, two lateral lobes subrotund, c. 3.5 × 3 mm, two posticus lobes oblong-elliptic, c. 2.5 × 2.5 mm, all lilac-pink, sparsely glandular-pilose outside, glabrous inside, without dark sessile glands on the palate, which is strongly raised transversely with a median groove to accommodate the filaments of the posticus pair of stamens. *Stamens* unlike, anticus pair erect, filaments c. 1 mm long, glabrous or with a few gland-tipped hairs, anthers c. 0.75 mm long, not cohering, pollen grey-green; posticus pair projecting straight forward, filaments 1.5 mm long, minutely glandular-puberulous, anthers c. 0.75 mm long, cohering strongly, pollen grey-green. *Ovary* c. 0.75 × 0.5 mm, deltoid in outline, ovules two in each loculus; style 1.5 mm long, projecting straight forward above the posticus stamens, stigma capitate. *Capsule* c. 2 × 3 mm, subrotund, apex beaked; seeds c. 2 mm long, testa raised-reticulate. Fig. 7 e–h.

CITATION

CAPE—3127 (Lady Frere): Barkly East—Elliot distr. boundary, Saalboom Nek (-AB), c. 7200 ft., 15/11/1959, Acocks 20204 (PRE).

Diascia lilacina is known only from the cliffs at the summit of Saalboom Nek Pass on the road from Barkly East to Elliot via Clifford. The colour of the flowers, lilac-pink, is unusual in the genus, but the most extraordinary feature of the corolla is the production of the window into a long hollow cone and the absence of lateral spurs. A similar elongation of the window occurs in *D. stachyoides* (which also has a similar leafy inflorescence) and *D. fetcaniensis*, but both these species have, in addition, two lateral spurs: in

D. lilacina two very shallow lateral pouches occur in place of spurs, and these are devoid of dark sessile glands. The flowers are exceptionally small too, being matched in size only by those of *D. personata*, which also has a very odd corolla, but quite different from that of *D. lilacina*, and sometimes by those of *D. rigescens*, which again differs markedly in corolla form. The arrangement of the stamens in *D. lilacina* is not unlike that in *D. purpurea* and its two allies, where a pair of staminodes or reduced stamens stand erect, and a pair of fully fertile stamens project forward; however, in *D. lilacina* the anthers are all alike, and all produce grey-green pollen.

GROUP 4

14. ***Diascia anastrepta*** Hilliard & Burt in Notes R. bot. Gdn Edinb. 41: 312 (1983). Type: Natal, 2929 CB, Underberg distr., Sani Pass, c. 2 620 m, 17/2/1982, Hilliard & Burt 15498 (E, holo; NU, iso.).

Stoloniferous perennial herb, stems many from the crown, subsimple to well-branched, up to c. 400 mm long, 2–3 mm diam., decumbent or suberect, lower part rooting, glabrous or nearly so on leafy parts, glandular-puberulous on the inflorescences. *Leaves* glabrous, mostly 10–25 × 8–20 mm, smaller upwards, ovate or elliptic-ovate, subacute or obtuse, base subcordate or broadly cuneate, margins subentire to serrate; petiole up to 8 mm long; uppermost leaves often subsessile. *Flowers* few to many in terminal racemes; bracts up to 6 × 4 mm, ovate-lanceolate, acute; pedicels mostly 20–35 mm long, often spreading widely particularly in fruit, glandular-pilose. *Calyx* segments lanceolate, two anticus ones 5 × 2.25 mm, three posticus ones slightly smaller, glandular-pilose. *Corolla* tube c. 6 mm long, shallowly invaginated between the spurs and with two parallel grooves down the back flanking the convex “window”, two lateral spurs c. 6–7 mm long, spreading at right angles to the tube, the tips upcurved, each with a patch of dark sessile glands within; limb c. 24 mm long, anticus lobe c. 12 × 12 mm, two lateral lobes c. 8 × 7 mm, two posticus lobes c. 6 × 6 mm, all subrotund, whole corolla rich pink with a white patch on outside on floor of tube and at base of anticus lobe, marking the hollow in which the two fully fertile stamens lie, sparsely glandular-pilose outside, glabrous inside except for two patches of dark sessile glands at the mouth of tube and base of anticus lobe flanking the essential organs and sometimes a few similar glands around the sinuses of the four upper lobes, “window” elongate, concave, reaching nearly to the base of the filaments where it merges into a short boss, yellow marked with dark blotches and surrounded by a crimson suffusion. *Stamens* with filaments of the anticus pair arching up and forward, c. 6 mm long, glandular-pubescent in upper part, anthers greatly reduced, sometimes sterile, sometimes producing a little yellow pollen; filaments of the posticus

pair reclining in a hollow in the floor of the corolla tube and base of anticonic lip; anthers c. 1.5 mm long, pollen green. *Ovary* c. 2.5×1.25 mm, lanceolate in outline, ovules many in each loculus, style c. 3 mm long, reclining; stigma capitate, lying between the lower pair of anthers. *Capsule* up to 15×7 mm, lanceolate in outline; seeds c. 1.5 mm long, curved, winged and ridged. Fig. 8 a–d.

SELECTED CITATIONS

NATAL—2829 (Harrismith): Bergville distr., Cathedral Peak Forestry Reserve, Upper Masonjwaan Valley (-CC), 7000 ft., 31/12/1964, *Schelppe* 7167 (BOL, K); ibidem, Organ Pipes Pass area, 9300 ft., 29/3/1953, *Killick* 1912 (PRE); ibidem, Cleft Peak, 10 000 ft., 21/1/1956, *Edwards* 1166 (NU, PRE); ibidem, Ndedema valley near Schoongezicht cave, 16/4/1978, *Hilliard* 8138 (E, NU).

—2929 (Underberg): Estcourt distr., Giant's Castle (-AD), 8000 ft., 12/1914, *Symons* 314 (PRE); ibidem, 1 800 m, 14/12/1978, *Stewart* 2074 (K, NU); ibidem, hort. Kirstenbosch, 23/11/1977, *Winter* 852/77 (NBG); ibidem, Bushman's River Pass, 7200–9000 ft., 22/1/1940, *West* 1648 (BOL, PRE); Mpendhle distr., Highmoor Forest Reserve, ridge SE of Giant's Castle, c. 2 440 m, 4/1/1983, *Hilliard & Burt* 16156 (E, K, NU, PRE, S); Kamberg area, 'Storm Heights', c. 2 100 m, 16/12/1978, *Hilliard & Burt* 11775 (E); Upper reaches of Ntshishini river (-CB), c. 2 440 m, 2/12/1982, *Hilliard & Burt* 15772 (E, NU); Underberg distr., 5–7 miles NNW of Castle View Farm, headwaters Mlahlangubo river, 2 500–2 590 m, 23/1/1982, *Hilliard & Burt* 15326 (E, NU); Cobham Forestry Reserve, Lakes Cave area, c. 2 380 m, 12/12/1982, *Hilliard, Burt & Manning* 15941 (E, K, NU, PRE).

LESOTHO—2828 Butha Buthe distr., between Oxbow river campsite and Khatibe B (-DC), 8500 ft., 21/1/1962, *Troughton* B32 (GRA); Between Mota Pass and Thakabanna Cattle Post (-DA), 10 000 ft., 7/2/1959, *Coetsee* 378 (NBG); Top of Mota Pass, 10 000 ft., 6/2/1954, *Coetsee* 429 (NBG); Khatibe camp C above Tshlanyana valley, 8600 ft., 20/1/1962, *Lubke* 241 (PRE); Upper Moteng Pass (-DC), 2 600 m, 28/1/1952, *Killick* 4426 (PRE).

—2927 (Maseru): Leribe distr., Thaba Phutsoa (-DB), 9500 ft., 1/1946, *Archibald* 519 (GRA); Maseru distr., Blue Mountain Pass (-BD), c. 2 745 m, 13/1/1979, *Hilliard & Burt* 12102 (E, NU); ibidem, c. 3 000 m, 20/1/1981, *Schmitz* 9185 (PRE); Bushman's Pass, c. 2 100 m, 13/1/1979, *Hilliard & Burt* 12120 (E, NU); Molimo Nthuse Pass, c. 2 285 m, 10/1/1979, *Hilliard & Burt* 12030 (E, NU).

—2928 (Marakabei): Berea/Maseru distr., Mamalapi (-AC), 8000 ft., 1/1/1949, *Compton* 21413 (NBG).

—2929 (Underberg): Mokhotlong distr., Sani Top, E of chalet (-CB), c. 2 900 m, 16/1/1976, *Hilliard & Burt* 8831 (E, K, MO, NU, PRE).

TRANSKEI—3028 (Matatiele): Ramatseliso (-BB), c. 7600 ft., 27/2/1962, *Acocks* 22065 (PRE).

Diascia anastrepta ranges over the high mountains of Lesotho and has been recorded along the face of the Drakensberg in Natal and Transkei from Cathedral Peak to Ramatseliso, over an altitudinal range of 1 800–3 000 m. It commonly grows in damp and partially shaded places along the foot of basalt cliffs or in the shelter of grass tufts along rocky watercourses; occasionally it grows among rocks in the boulder beds of

streams. The plants form loose tangled masses, a growth habit which at once distinguishes it from both its close allies, *D. purpurea* and *D. megathura*. The corollas of *D. anastrepta* and *D. megathura* are strikingly similar, but they differ in a number of features: the two lateral corolla lobes in *D. anastrepta* do not ascend to join the two posticous lobes as they do in *D. megathura*, and the tips of the spurs are slightly upcurved (whence the trivial name), not straight or slightly downcurved (Fig. 8). In *D. anastrepta*, the window is shallowly concave when viewed from the front; from the back it is of course convex, with a longitudinal groove on either side. In *D. megathura*, the window is flat, and, viewed from the back, is seen to lie on the floor of the single groove running down the corolla tube. None of these characters is easy to see in dried material, and then the short hairs on the pedicels of *D. anastrepta* (scarcely 0,25 mm long, not at least 0,5 mm) and on the filaments of the reduced stamens (up to 0,5 mm long, not mostly at least 1 mm long) are useful distinguishing characters.

15. *Diascia megathura* Hilliard & Burt in Notes R. bot. Gdn Edinb. 41: 313 (1983). Type: Natal, 2929 CB, Underberg distr., Cobham Forest Reserve, Upper Polela Cave, c. 2 075 m, 12/2/1979, Hilliard & Burt 12465 (E, holo.; NU, iso.).

Stoloniferous perennial herb, stems few or several from the crown, simple or sparingly branched, up to 450 mm long, 2–3 mm diam., lower part prostrate, rooting near base, flowering part erect, sparsely glandular-pilose, more densely so on the inflorescence. *Leaves* mostly 15–30 × 11–20 mm, diminishing in size upwards, ovate, elliptic-ovate or broadly elliptic, apex obtuse, base broadly cuneate, margins entire to obscurely serrulate or crenate, thick-textured, glabrous or nearly so above, a few long gland-tipped hairs mainly over the veins below, dark green above, sometimes reddish below; petiole up to 3 mm long, upper leaves nearly sessile. *Flowers* somewhat nodding, few to many in terminal racemes, simple or sparingly branched; bracts up to 6 × 4 mm, ovate-lanceolate, acute; pedicels mostly 15–20 mm long, spreading at an angle of about 45°, curved downwards at the tip, glandular-pilose. *Calyx* segments lanceolate, two anticus ones c. 5 × 2 mm, three posticus ones slightly smaller, glandular-pilose. *Corolla* tube c. 6 mm long, invaginated between the spurs and deeply grooved down the back, two lateral spurs c. 6–8 mm long spreading at right angles to the tube, each with a patch of dark sessile glands within at the tip; limb c. 20 mm long, anticus lobe c. 9 × 11 mm, hemispherical, the two lateral lobes much smaller and ascending to join the two posticus ones, forming an upper lip c. 9 × 16 mm, lobes ± hemispherical, whole corolla rich pink, sparsely glandular-pilose outside, glabrous inside except for two patches of dark sessile glands at the

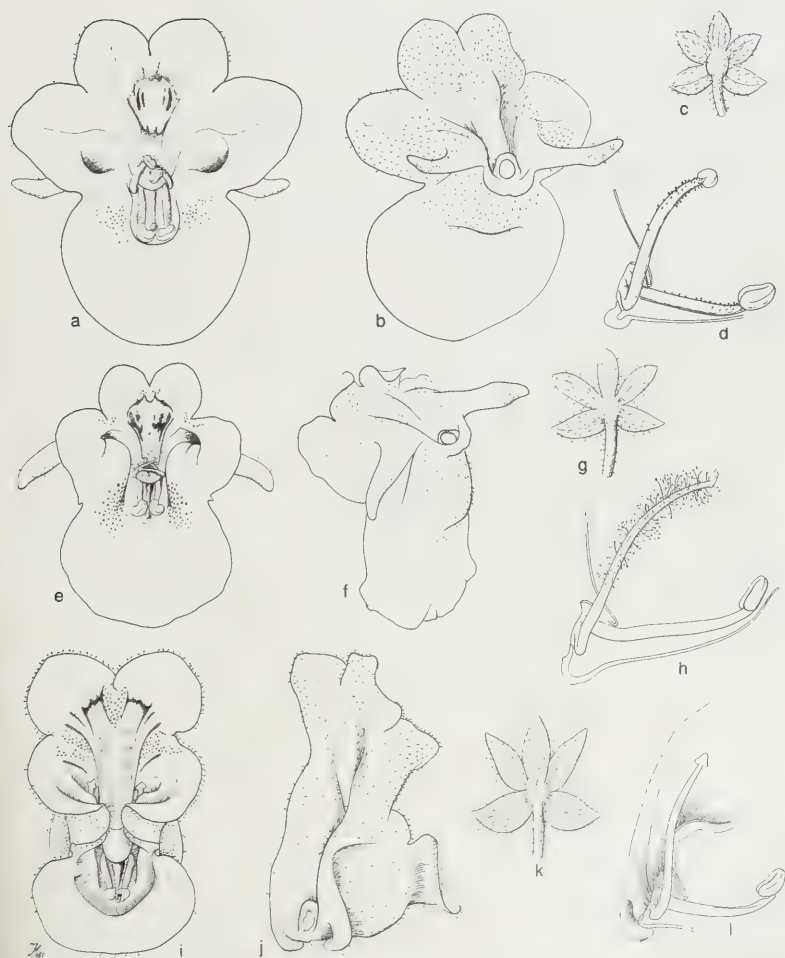


FIG. 8.

Diascia anastrepta (Hilliard & Burt 15498); a, corolla, front view ($\times 2.5$); b, corolla, back view ($\times 2.5$); c, calyx ($\times 2.5$); d, 2 stamens and corolla base in section ($\times 4$). *D. megathura* (Hilliard & Burt 12465); e, corolla, front view ($\times 2.5$); f, corolla, back view ($\times 2.5$); g, calyx ($\times 2.5$); h, 2 stamens and corolla base in section ($\times 6$). *D. purpurea* (Stewart & Manning 2240); i, corolla, front view ($\times 2.5$); j, corolla, back view ($\times 2.5$); k, calyx ($\times 2.5$); l, 2 stamens and corolla base in section ($\times 3.5$; Hilliard & Burt 14441).

mouth of the tube, on the ridges flanking the essential organs, and sometimes a few similar glands around the sinuses of the 4 upper lobes, "window" elongate and merging with a boss descending to the base of the filaments, yellow marked in the upper part with dark brownish-maroon blotches and streaks. *Stamens* unlike, the filaments of the anticus pair arching up and forward, c. 6 mm long, glandular-villous in the upper part, anthers greatly reduced, sterile or containing a few yellow pollen grains; filaments of the posticus pair reclining in a hollow in the floor of the corolla tube, c. 3 mm long, glabrous, or with a few gland-tipped hairs; anthers c. 1.5 mm long, pollen green. *Ovary* c. 2×1 mm, deltoid in outline, ovules many in each loculus; style c. 3 mm long, reclining; stigma capitate, lying between the lower pair of anthers. *Capsule* up to 20×7 mm, lanceolate in outline; seeds c. 1.75 mm long, curved, broadly winged, ridged. Figs. 2 g-i, 8 e-h.

CITATIONS

NATAL—2929 (Underberg): Polela (-CB), 6–7000 ft., 2/1896, *Evans* 635 (NH); 5–7 miles NNW of Castle View Farm, headwaters of Mlahlangubo river, c. 2 100 m, 18/1/1982, *Hilliard & Burt* 15142 (E, K); Garden Castle Forest Reserve, main stream valley W of forester's house, c. 1 800 m, 28/1/1975 *Hilliard & Burt* 7804 (E, K, MO, NU, PRE); ibidem, Mlambonja valley, 1 950–2 075 m, 4/1/1982, *Hilliard & Burt* 14872 (E, NU); ibidem, Sipongweni, 2 100 m, 20/2/1981, *Hilliard & Burt* 13995 (E, NU); ibidem, 1/1946, *Crookes* 69 (NU); ibidem, Lakes Cave area, c. 2 100 m, 12/12/1982, *Hilliard, Burt & Manning* 15949 (E, NU); Bushmen's Nek area, Thamathu Pass, 2 285 m, 13/2/1982, *Stewart & Manning* 2272 (E, NU); ibidem, path to Forestry lookout, 1 920 m, 12/2/1982, *Stewart & Manning* 2271 (NU); Polela distr., Bulwer (-DD), 1 770 m, 1/1950, *Harvey* 5 (NU).

LESOTHO—2929 (Underberg): Sehlabathebe National Park, waterfall of the Tsoelikana river (-CC), 2 400 m, 9/1/1976, *Beverly* 277 (PRE).

Diascia megathura is very closely allied to *D. purpurea* (no. 16), and seems to replace it in the southern Drakensberg: *D. purpurea* has been recorded as far south as the headwaters of the Loteni, while the northernmost station for *D. megathura* is on the headwaters of the Polela, some 25 km to the SW. However, the intervening country is very rugged and difficult of access and one or both of these species will certainly occur there. *Diascia megathura* may be found in short grass along stream valleys, but it also grows in stony or gritty soil on slopes and on the tops of ridges; it is possibly tolerant of drier conditions than *D. purpurea*.

In floral structure, *D. megathura* strongly resembles *D. anastrepta* (see above).

16. *Diascia purpurea* N.E. Br. in Kew Bull. 1895: 151 (1895); Hiern in Thiselton-Dyer, Fl. Cap. 4 (2): 161 (1904); Trauseld, Wild Flowers Natal Drakensberg 165 cum tab. (1969). Type: Natal, [Estcourt distr.] on the Dra-

kensberg, in Tiger Cave Valley, [headwaters of Hlatikulu river] Jan. 1895, among grass, scarce, leaves deep purple on lower side, *Evans* 377 (K, holo.).

Stoloniferous perennial herb, stems few from the crown, simple or sparingly branched, up to 450 mm long, 3.5 mm diam., lower part prostrate, rooting near base, flowering part erect, sparsely glandular-pilose, more densely so on the inflorescence. *Leaves* mostly 20–45 × 15–50 mm, diminishing in size upwards, ovate, apex obtuse, base broadly cuneate, margins subentire or obscurely crenate, thick-textured, glabrous except for a few gland-tipped hairs on margins and over veins, dark green above, all but the youngest deep purple below; petiole up to 2 mm long, uppermost leaves nearly sessile. *Flowers* nodding, many in a terminal raceme, simple or sparingly branched, bracts up to 6 × 5 mm, ovate-lanceolate, acute; pedicels mostly 13–25 mm long, spreading at an angle of about 45°, curved at the tip, glandular-pilose. *Calyx* segments lanceolate, two anticus ones 5.5 × 2.25 mm, three posticus ones slightly smaller, all green, glandular-pilose. *Corolla* tube c. 5–7 mm long, bowl-shaped, deeply grooved down the back, two lateral spurs c. 3–4 mm long, strongly curved inwards under the base of the bowl, with a patch of dark sessile glands within at the tips; limb c. 18–20 mm long, anticus lobe very short (c. 2.5 mm), the two lateral lobes ascending to join the two posticus ones forming an upper lip c. 13 × 16 mm, lobes ± hemispherical, the laterals inflexed, whole corolla light to dark salmon-pink, spurs and the bowl of the corolla tube white, sparsely glandular-pilose outside, glabrous inside except for three patches of dark sessile glands around the sinuses of the four upper lobes; “window” elongate forming a grooved boss descending from just below the posticus sinus to the base of filaments, yellow marked in the upper part with brownish-maroon streaks or blotches. *Stamens* unlike, anticus pair erect, filaments c. 7 mm long, glandular-puberulous at the tips, anthers greatly reduced, sterile or producing a little yellow pollen; posticus pair projecting forward and lying in the bowl of the corolla tube, anthers 1.75 mm long, pollen green. *Ovary* c. 2.5 × 1.5 mm, deltoid in outline, ovules many in each loculus; style c. 5 mm long, reclining, stigma capitate, lying between the lower pair of anthers. *Capsule* c. 24 × 10 mm, oblongate in outline; seeds c. 2.5 mm long, curved, broadly winged. Fig. 8 i–l.

SELECTED CITATIONS

ORANGE FREE STATE—2828 (Bethlehem): Qwa-Qwa, near base of The Sentinel (-DB), 8–9000 ft., 21/2/1928. *Grant* 3630 (BOL. GRA. K. PRE); *ibidem*. 15/2/1983, *Roux* 1514 (NBG, NU).

NATAL—2828 (Bethlehem): Royal Natal National Park, Mahai Valley (-DB), 5100 ft., 13/4/1946. *Schelpé* 1523 (NU); *ibidem*, path to Broome Hill from Witzies-

hoek resort, 7000 ft., 3/2/1982, *Stewart & Manning* 2258 (E, NU); ibidem, Devil's Hoek Valley, c. 5500 ft., 22/3/1981, *Hilliard & Burt* 14441 (E, NU); Mont-aux-Sources, 9–10 000 ft., 23/2/1926, *Bayer & McClean* 300 (K, PRE).

—2829 (Harrismith): Cathedral Peak area, Cleft path (-CC), 7400 ft., 1/1944, *Schelte* 515 (NU); ibidem, below Organ Pipes Pass, c. 8000 ft., 22/1/1956, *Edwards* 1182 (NU, PRE).

—2929 (Underberg): Estcourt distr., Giant's Castle (-AD), 7–8000 ft., 1/1915, *Symons* 305 (PRE); Mpendhle distr., Highmoor Forest Reserve, headwaters of Elandshoek River (-DB), 7700–8000 ft., 5/1/1983, *Hilliard & Burt* 16227 (E, NU).

—2930 (Pietermaritzburg): Lion's River distr., Nottingham Road (-AC), *Harrison* 4 (PRE).

Diascia purpurea has a limited distribution in the northern part of the Natal Drakensberg and its foothills, above c. 1 675 m, from The Sentinel and Mont-aux-Sources to the headwaters of the Loteni river immediately south of Giant's Castle. It has quite the most bizarre corolla form of any species we know; also, the corollas hang face downwards and the pollination biology of this, and of all the species, would make a fascinating study. The plants may be locally common but are easily overlooked because the decumbent stems lie hidden by grasses and bushes. However, they often grow in rich, moist basaltic soils laid bare by paths and tracks.

The only species with which *D. purpurea* is likely to be confused is *D. megathura* (no. 15); they are remarkably alike in habit and foliage and, together with *D. anastrepta* (no. 14), share the character of two erect reduced stamens, two reclining fully developed ones. But in *D. purpurea* the two spurs are very short and curve in under the bowl of the corolla tube; in both *D. megathura* and *D. anastrepta* the spurs are much longer and lie at right angles to the corolla tube. These characters will always serve to distinguish dried specimens; the living plants show further differences in corolla form that tend to disappear in the dried state except perhaps for the elongated upper lip of *D. purpurea*. (See Fig. 8).

GROUP 5

17. *Diascia integerrima* Benth. in Hook., *Comp. Bot. Mag.* 2: 18 (1836) and in DC., *Prodr.* 10: 259 (1846); Hiern in Thiselton-Dyer, *Fl. Cap.* 4 (2): 159 (1904). Lectotype: Cape, [Barkly East distr.,] Witbergen, an steinigen grasreichen Bergabhängen und felsigen Oertern 6000–7000 Fuss, Januar, *Drège* (K, lecto.; E, isolecto.).

?*Nemesia hastata* Benth. in DC., *Prodr.* 10: 260 (1846); Hiern in Thiselton-Dyer, *Fl. Cap.* 4 (2): 175 (1904). Type: Cape, [Middelburg distr.,] in stony grassy places by the roadside, on the southern side of the Naauw Poort, *Burchell* 2783 (G–DC, holo.; K, iso.).

?*Diascia moltenensis* Hiern in Thiselton-Dyer, *Fl. Cap.* 4 (2): 158 (1904).

Type: Albert div., Broughton near Molteno, 6300 ft., Dec. 1982, *Flanagan 1616* (BOL, K, NU, SAM).

Stoloniferous perennial herb, stems many from the crown, tufted, branching mostly low down, mostly up to c. 450 mm tall, but reaching 1 m or more if straggling up through other vegetation, c. 2 mm diam., erect, glabrous. *Leaves* mostly $13-40 \times 1-3$ (-6) mm (ratio 6-16:1) (but see discussion), becoming smaller upwards, linear to oblong-lanceolate, apex subacute, base cuneate, margins entire or with an occasional minute tooth, glabrous; petioles 1-3 mm long. *Flowers* several to many in terminal racemes; bracts up to 5×2 mm, lanceolate, pedicels c. 6-18 mm long, ascending at an angle of c. 45° , they and the inflorescence axis glandular-puberulous, hairs scarcely 0.25 mm long. *Calyx* segments spreading, lanceolate, two anticus ones $3-4 \times 1.25-1.5$ mm, three posticus ones slightly smaller, all green, glandular-puberulous outside. *Corolla* tube c. 5-6 mm long, not invaginated, deeply channelled on the anticus side forming the keel, two lateral spurs 4-6 mm long, directed straight down, the tips strongly incurved, with a patch of dark sessile glands within; limb c. $17-24 \times 15-24$ mm, anticus lobe $7-11 \times 9-15$ mm, with a raised keel at the base (part of the tube) separating the openings to the two spurs, two lateral lobes $5-8 \times 5-9$ mm, two posticus lobes $5-7 \times 4-7$ mm, all lobes subrotund, rose-pink, keel usually covered in dark sessile glands that extend briefly onto the palate, glands sometimes few or wanting, a few sometimes present below the upper sinuses, the "window" shallowly concave, yellow and maroon. *Stamens* standing erect, the anthers almost hidden under the upper lip, filaments 2.75-3 mm long, glandular-puberulous; anthers c. 0.75 mm long, cohering strongly; pol-

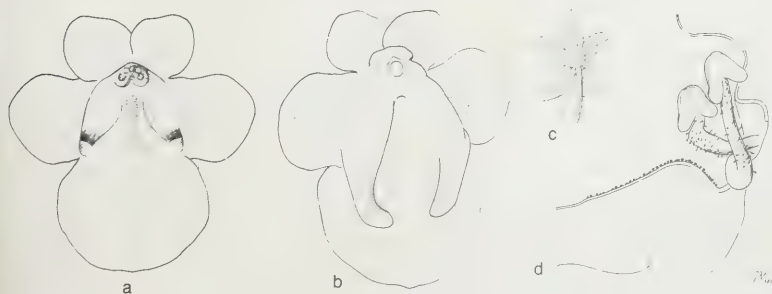


FIG. 9.

Diascia integerrima (Bigalke sub *Batten* 589); a, corolla, front view ($\times 2.5$); b, corolla, back view ($\times 2.5$); c, calyx ($\times 2.5$); d, 2 stamens and corolla base in section ($\times 6$).

len yellow. *Ovary* 1.5 × 1 mm, deltoid in outline, ovules many in each loculus; style 1.5 mm long, stigma capitate, lying between the anthers. *Capsules* (5-) 6-15 mm long, urceolate; seeds 1 mm long, curved, winged and ridged. Figs 2 j-l, 9 a-d.

SELECTED CITATIONS

LESOTHO—2828 (Bethlehem): Leribe distr., Leribe (-CC), *Dieterlen* 369 (K, PRE, SAM).

—2927 (Maseru): Berea distr., near Mateka (-BB), c. 6000 ft., 22/3/1951, *Bruce* 351 (K, PRE); Mamathes, 5850 ft., 3/1941, *Jacot Guillarmod* 552 (PRE); Bushman's Pass (-BD), 10/1/1979, *Hilliard & Burt* 12035 (E, NU); Makhaleng Valley near Qilolane Falls, c. 7000 ft., 11/1/1979, *Hilliard & Burt* 12045 (E, NU); Molimo Nthuse, 3/1977, *Schmitz* 7321 (PRE); Roma, Mafefoane (-BC), 23/1/1975, *Schmitz* 1507 (PRE).

—2928 (Marakabei): Maseru distr., Semonkong (-CC), c. 7000 ft., 28/11/1976, *Davidson* 3029 (PRE); 3 km from Taung on road to Matabeng (-DB), 1 980 m, 1/12/1977, *Killick* 4270 (PRE).

—2929 (Underberg): Merareng on the Sinqubeta River (-AA), c. 8000 ft., 1/1953, *Liebenberg* 5668 (PRE); Mokhotlong distr., Phuta (-AC), 9500 ft., 26/2/1949, *Compton* 21585 (NBG); 1½ miles downstream from top of Langalibalele Pass, Lekhalabalese stream (-AD), c. 9400 ft., 11/2/1972, *Wright* 1266 (NU); Sehlabathebe National Park (-CC), 2 400 m, 16/2/1975, *Beverly* 239 (PRE).

—3028 (Matatiele): Qacha's Nek distr., near Qacha's Nek, Rapase (-BA), 5500 ft., 10/3/1936, *Galpin* 14050 (K, BOL, PRE); Quthing distr., Buffalo river waterfall (-CA), c. 7 100 m, 14/3/1904, *Galpin* 6782 (BOL, K, GRA, PRE, SAM); Orange River valley, c. 6000 ft., *Staples* 100 (PRE).

ORANGE FREE STATE—2827 (Senekal): Gumtree (-DC), 21/3/1939, *Boddam-Wetham* 911/11 (NBG); Ficksburg, Moolman's Hoek Peak (-DD), 9000 ft., 30/11/1934, *Galpin* 13926 (BOL, PRE).

—2828 (Bethlehem): Farm Koeberg 1663 (-BC), 1 825 m, 24/2/1972, *Scheepers* 1825 (PRE); Near Fouriesburg, farm Wynford (-CA), 29/12/1927, *Stokoe* 1512 (PRE); Clarens (-CB), 16/4/1940, *van der Linde* 78 (PRE); Witzieshoek (-DB), 3/1917, *Junod* TM 17500 (PRE).

—2829 (Harrismith): Mount Pelaa (-BA), 6200 ft., 21/12/1973, *Ferreira* 112 (PRE).

—3026 (Aliwal North): Rouxville (-BD), 1/9/1926, *Maree* 58 (PRE).

NATAL—2929 (Underberg): Garden Castle Forest Reserve, Mlambonya valley, path to Mashai Pass (-CA), 2 135 m, 8/1/1982, *Hilliard & Burt* 15032 (E, NU); Sani Pass (-CB), c. 2 440 m, 22/3/1977, *Hilliard & Burt* 9766 (E, NU); Cobham Forest Reserve, Upper Polela Cave area, c. 2 285 m, 13/2/1979, *Hilliard & Burt* 12475 (E, NU).

—3029 (Mount Currie): Vaalbank (-CB), 27/12/1879, *Haygarth* sub *Wood* 4225 (K).

TRANSKEI—3027 (I. adv Grev): Herschel distr., 17-20 miles SE of Tele police station on Lundean's Nek road (-BC), 4/11/1955, *Marais* 1060 (PRE).

CAPE—3025 (Colesberg): Wodehouse div., Waterkloof Pass (-AD), 6500 ft., 25/2/1946, *Acocks* 12524 (PRE).

—3026 (Aliwal North): Albert div., Burghersdorp (-CD), 1/1925, *Thode* A501 (PRE); Aliwal North distr., Joubert, 1/1925, *Thode* A 500 (PRE).

—3027 (Lady Grey): Lower slopes of Witteberg, road to Joubert's Pass (-CA/-CB), c. 1 800 m, 17/1/1979, *Hilliard & Burt* 12128 (E, NU); Farm Ossa between Lady Grey and Barkly East via Joubert's Pass (-CD), 6500 ft., 18/1/1982, *Matthews* 844 (NBG, NU); Barkly East distr., Lundean's Nek (-DA), c. 7400 ft., 21/1/1982, *Mat-*

thews 829 (NBG); Witteberg, farm Beddgelert, c. 1890 m, 1/12/1981, *Hilliard & Burt* 14591 (E, NU); Ben Mcdhui, gorge of the Bell River (-DB), 2 440 m, 7/2/1983, *Hilliard & Burt* 16557 (E, NU); Old Lady Grey—Barkly East road above Kraai River (-DC), 5600 ft., 29/1/1981, *Hilliard & Burt* 14569 (E, NU); 2 miles N of Moshesh's Ford (-DD), 19/11/1969, *Edwards* 4189 (PRE); Rhodes, 6500 ft., 16/5/1897, *Galpin* 2330 (BOL, PRE).

—3028 (Matatiele): Kloppershoek valley NE of Rhodes (-CA), c. 2 000–2 200 m, 14/2/1983, *Hilliard & Burt* 16632 (E, NU); Near the top of Naude's Nek, 8000 ft., 19/1/1982, *Matthews* 801 (NBG).

—3125 (Steynsburg): Middelburg distr., Middelburg (-AC), 6/4/1945, *Archibald* 2771 (GRA); Wolwe Kop, *Burke* (K).

—3126 (Queenstown): Andriesberg (-DA), 6400–6600 ft., 3/1896, *Galpin* 2114 (BOL, PRE); Sterkstroom [probably between Molteno and Queenstown], 4000 ft., *Sim* 20057 (PRE).

—3127 (Lady Frere): Elliot distr., Fetcani Pass (-BB), c. 2 285 m, 22/1/1979, *Hilliard & Burt* 12329 (E, NU).

Diascia integerrima is relatively widely distributed from the mountainous areas of the north east and eastern Orange Free State through Lesotho to the mountains of the north east Cape from Middelburg on the northern flank of the Sneeuwberg in the west to the Witteberg and Cape Drakensberg in the east; it is also found in the southern Natal Drakensberg and, despite lack of records, certainly occurs in the intervening parts of the Drakensberg in Transkei. It grows in the crevices of rock outcrops and on cliffs, or in loose or hard-packed gritty soil on slopes and along streambanks, and is clearly more tolerant of dry conditions than most species of *Diascia*.

Bentham (1836) cited two *Drège* specimens under his name *D. integerrima*, one from the Witteberg, one from Los Tafelberg. The specimen from Los Tafelberg (between Tarkastad and Cradock) is now in poor condition, but it is possible to see that the corolla lacks a median keel, one of the characteristic features of *D. integerrima*; it is probably *D. capsularis*. The specimen from the Witteberg is in good condition and we have chosen it as the lectotype.

The narrow leaves give typical *D. integerrima* an easily recognised facies. It could be confused with *D. patens*, which has somewhat similar leaves, but *D. integerrima* has a distinctive corolla form: the median keel, which is often gland-dotted, is very prominent and separates the openings to the two lateral spurs; these spurs are directed straight down, are hooked at the tips and lie almost parallel to one another, separated by the deep channel that forms the keel.

Hiern sought to distinguish *D. moltenensis* from *D. integerrima* by its shorter leaves with sparingly toothed, rather than entire, margins. *D. integerrima* may also have toothed leaves, but those of *D. moltenensis* are mostly shorter (7–17 mm, not 13–40 mm) and are proportionally broader (1.5–5:1, not 6–16:1); however, plants that are undoubtedly *D. integerrima*,

may have shorter and broader leaves near the base (e.g. *Hilliard & Burt* 9766 and 1204).

There is another name to be considered: this is *Nemesia hastata* Benth., based on *Burchell* 2783 collected near Naauwpoort, and exactly matched by another collected by Burke at Wolvekop in the same area, which is not far to the NW of Molteno. As the name implies the leaves of this plant are distinctly hastate at the base; this is a frequent character of *D. integerrima* and of the allied *D. capsularis*.

There are two puzzling specimens collected by E. E. Galpin (nos. 2114 and 2115) on Andriesberg, near Queenstown. The differences between them are largely a matter of plant height and thus, perhaps, due to habitat exposure. Both are, on leaf form, referable to *D. moltenensis*. On 2115 Dr. A. Lewis Grant pencilled the suggestion that it represented *D. capsularis* $\times$ *D. rigescens*. There is not the slightest indication of *D. rigescens* in the material, and the species is not known from this area. However, Andriesberg, and the whole area of the *D. moltenensis*/*Nemesia hastata* forms, is in or near the overlap area of *D. integerrima* and *D. capsularis*, and the possibility that these forms have had a hybrid origin is not to be discounted.

If *D. moltenensis* were to be retained as a species, it would have to take the earlier epithet from *Nemesia hastata*. We are reluctant to introduce this new name when the status of the taxon is so doubtful. We prefer simply to call attention to these plants and point out that there is an interesting field study in this area that will only be elucidated by patient surveys.

18. ***Diascia dielsiana*** Hiern in Thiselton-Dyer, Fl. Cap. 4 (2): 155 (1904). Types: Cape, Riversdale div., near Riversdale, *Rust* 125 and 227 (B⁺).

Perennial herb, stems several from a thick woody stock, up to c. 450 mm tall, woody, simple below, branching above, glabrous. *Leaves* patent or ascending, mostly c. 20–40 $\times$ 2 mm, smaller upwards, linear-lanceolate, apex acute, base cuneate, margins entire, often strongly revolute, glabrous; petioles c. 1 mm long. *Flowers* few in lax terminal racemes, aggregated into leafy panicles; bracts up to c. 3 $\times$ 2,5 mm, ovate, shortly acuminate, glabrous; pedicels 5–10 mm long, filiform, glandular-puberulous, ascending at an angle of c. 45°. *Calyx* segments lanceolate, very acute, glandular-puberulous; anticus pair c. 2,25 $\times$ 1 mm, posticus ones slightly smaller. *Corolla* tube c. 2,25 mm long, not invaginated, two lateral spurs 3–4 mm long, spreading at right angles to the tube, with dark sessile glands within near the tip; limb c. 8–9 $\times$ 7–8 mm, anticus lobe c. 4 $\times$ 4 mm, lateral lobes 2 $\times$ 2,5 mm, posticus lobes 1,5–1,75 $\times$ 1,5–1,75 mm, all subrotund, sparsely glandular hairy outside, glabrous inside, “bright pink”, “window” shallowly concave. *Stamens* erect, filaments 2 mm long, very sparsely glandular-puberu-

lous, anthers 0,3 mm long, cohering. Ovary $1 \times 0,75$ mm, ovules many; style 1,25 mm long; stigma capitate, lying between the anthers. Capsules not seen.

CITATION

CAPE—3421 (Riversdale): Farm Driekuul (-AB), 5/1915, Muir 1993 (BOL).

Diascia dielsiana is very closely allied to *D. patens* from which it may be distinguished by its smaller flowers (corolla limb c. $8-9 \times 7-8$ mm, not c. $12-17 \times 10-17$ mm), with spurs 3-4 mm long spreading at right angles to the tube (not 4-5 mm long and diverging at an angle of c. 45°), and corolla devoid of dark sessile glands (not a transversely elongate central patch on the palate and sometimes adjacent to the upper sinuses).

It is a thoroughly ill-known species, recorded only from Riversdale district.

19. ***Diascia patens*** (Thunb.) Fourcade in Mem. bot. Surv. S.Afr. **20**: 72 (1942). Type: Cape of Good Hope, Thunberg (UPS).

Antirrhinum patens Thunb., Prodr. Pl. Cap. 105 (1800) et Fl. Cap. 482 (1823).

Linaria patens (Thunb.) Spreng., Syst. Veg. **2**: 793 (1825).

Nemesia patens (Thunb.) G. Don, Gen. Syst. **4**: 534 (1837-1838); Benth. in DC., Prodr. **10**: 264 (1846).

Diascia monasca Hiern in Thiselton-Dyer, Fl. Cap. **4** (2): 142 (1904). Type: Cape, Humansdorp div., on the rocky side of the mountain close to the western bank of the Wagenbooms River, on the northern side of the Lange Kloof, 11/3/1814, Burchell 4916 (K).

Herbaceous, probably perennial (no basal parts seen), main stems woody, at least 300 mm long, up to 3 mm diam., sprawling, clambering up to 1 m (Taylor), well-branched, glabrous. Leaves patent, mostly $15-36 \times 2-4,5$ mm, ratio at least 10:1, diminishing in size upwards, linear-lanceolate or lanceolate, apex acute, base cuneate, margins entire or with a few sharp teeth, glabrous, petioles 1-1,5 mm long. Flowers few, in lax terminal racemes; bracts up to c. 4×2 mm, ovate, very acute, or sometimes the lowermost pair leaf-like, glandular-puberulous; pedicels 13-20 mm long, ascending at an angle of c. 45° , they and the inflorescence axis glandular-puberulous. Calyx segments probably spreading, lanceolate, two anticus ones c. $3-4 \times 1,5$ mm, three posticus ones slightly smaller, all glandular-puberulous. Corolla tube c. 4-5 mm long, scarcely invaginated, two lateral spurs c. 4-5 mm long, straight, diverging at an angle of c. 45° , with a patch of dark sessile glands within near the tip; limb c. $12-17 \times 10-17$ mm, anti-

cous lobe $5-9 \times 11$, lateral lobes $3.5-5 \times 3.5-6$ mm, posticous lobes $3-4 \times 3.5-4.5$ mm, all subrotund, "claret-red" (Fourcade) "red" (Acocks) or "orange-red" (Taylor), sparsely glandular-puberulous outside, glabrous inside except for a transverse band of dark sessile glands at the base of the lower lip, sometimes a few glands below the upper sinuses as well, the "window" shallowly concave. *Stamens* possibly erect; filaments 2.5 mm long, minutely glandular-puberulous, hairs very few; anthers 0.5 mm long, cohering. *Ovary* 1.5×1.25 mm, deltoid in outline, ovules many in each loculus, style 1.5 mm long, stigma capitate. *Capsules* c. 6×3 ; seeds c. 1.5 mm long, curved, broadly winged, ribbed.

CITATIONS

CAPE—3321 (Ladismith): Rooiberg, below waterfall in Groenkloof below hut (-DA), c. 3000 ft., 22/4/1977, Taylor 9648 (PRE); Top of Rooiberg Pass S Side, 2600 ft., 6/3/1959, Acocks 20380 (NBG).

—3323 (Willowmore): Uniondale div., N of Joubertina (-DD), 2000 ft., 8/1923, Fourcade 2692 (BOL); ibidem, 7/1942, Esterhuysen s.n. (BOL); Hills of Uitenhage Carroo, Alexander Prior s.n. (K).

—3420 (Bredasdorp): Potteberg (-CA), Bayliss s.n. (K).

The original collection of *D. patens*, made by Thunberg, is unlocalised, but his second journey to Kaffraria took him through the Langekloof, whence came Burchell's collection, and he also travelled elsewhere in the present-day Uniondale district. The passage of two hundred years has done little to make the species better known, but it can be gleaned from collectors' notes that the plants favour rocky sites, and Taylor records "bed of kloof, stream-side thicket" where the plants clambered up through other bushes.

The narrow patent leaves give the species a characteristic facies, and probably dictated Thunberg's choice of epithet. The genus *Diascia* was not described until 1820, so it is understandable that Thunberg placed his plant in the long-established genus *Antirrhinum*, despite its two spurs. However, the specimen is a poor one, and the two spurs are not immediately evident; Sprengel (1825) transferred the species to *Linaria*, and G. Don (1837–38) to *Nemesia*, both genera being characterised by one-spurred corollas. Bentham (1846) accepted the species in *Nemesia* though he placed it at the end of the genus as an insufficiently known species, and in this he was followed by Hiern (1904).

Hiern failed to associate Burchell's collection from the Langekloof with Thunberg's plant, and re-described it as *Diascia monasca*, supposedly with only one broad shallow pouch, yellow within. Burchell's label describes this pouch, which is of course the window, but he does not mention the spurs. The Burchell specimen at Kew has no intact flowers left (were there ever any?) but in habit, foliage and indumentum it so exactly matches Fourcade's

collection from the same locality that we have no hesitation in equating them.

Diascia patens is allied to *D. capsularis* but can be distinguished by its much narrower and differently shaped leaves (mostly linear-lanceolate, 2–4,5 mm broad, not deltoid, 5–17 mm broad), shorter spurs (c. 5 mm long, not 9–11 mm), shorter filaments (2,5 mm, not 3–4 mm) and shorter style (1,5 mm, not 2 mm). It is sometimes confused with *D. integerrima*, which differs markedly in corolla form.

GROUP 6

20. *Diascia rigescens* Benth. in Hook., Comp. Bot. Mag. 2: 18 (1836) and in DC., Prodr. 10: 259 (1846); O. Kuntze, Rev. Gen. Pl. 3 (2): 230 (1898); Hiern in Thiselton-Dyer, Fl. Cap. 4 (2): 162 (1904); Batten & Bokelmann, Wild Fl. E Cape Prov. 132, pl. 105, 2 (1966). Lectotype: E Cape, Katberg, auf Grasfeldern, 3000–4000 Fuss Höhe, November, Drège (K; E, isolecto.).

D. rigescens var. *angustifolia* Benth. in Comp. Bot. Mag. 2: 18 (1836). Type: Transkei, between the Umzimvubu and Umsikaba (sphalm Umzimkulu) rivers, 1000–2000 Fuss, October, Drège (K).

D. rigescens var. *bractescens* Hiern in Thiselton-Dyer, Fl. Cap 4 (2): 162 (1904). Type: Kaffraria, near Keiskamma river, 1860, Cooper 339 (BOL, K).

D. macowanii Hiern in Fl. Cap. 4 (2): 162 (1904). Type: E Cape, Fort Beaufort distr., Koonap, MacOwan s.n. (BOL).

Perennial herb, stems several from the crown, tufted, simple or sparingly branched, up to 1,3 m tall, 2–5 mm diam., erect or decumbent, glabrous. Leaves sometimes alternate upwards, usually crowded, mostly 15–60 × 10–37 mm, ovate, apex acute or subacute, apiculate, base cordate, margins sharply serrate, glabrous or thinly glandular-pilose, or glabrous below, glandular-puberulous on the inflorescence, thick-textured, sessile. Flowers many in crowded terminal racemes, which are often branched; bracts mostly 3–10 × 1–3 mm, ovate to linear-lanceolate, acute to acuminate; pedicels mostly 7–18 mm long, sharply ascending, glandular-pilose, hairs c. 0,3–0,6 mm long, sometimes sparse or entirely wanting. Calyx segments lanceolate two anticus ones up to 2–4 × 1,25–1,5 mm; three posticus ones slightly smaller, glandular-pilose. Corolla tube c. 4–6 mm long, not invaginated, deeply channelled on the anticus side forming the keel, two lateral spurs c. 3 mm long, directed downwards, tips strongly incurved, with a patch of dark sessile glands within; limb c. 11–18 × 11–18 mm, anticus lobe subrotund, c. 5–8 × 7,5–11 mm, two lateral lobes broadly ovate, c. 4–5 × 4–6 mm, two posticus lobes ovate or subrotund, c. 3–5 × 3,5–5 mm, all lobes pale or

rose-pink, sparsely glandular-pilose outside, glabrous inside except for stalked yellow glands on the keel, "window" shallowly concave, yellow and maroon. *Stamens* erect, filaments c. 2,5 mm long, glandular-puberulous; anthers 0,5–0,75 mm long, almost hidden under the upper lip, cohering strongly, pollen yellow. *Ovary* 0,75–1,25 × 0,75–1,25 mm, deltoid in outline, ovules many in each loculus; style 1 mm long, stigma capitate, lying between the anthers. *Capsule* c. 3–7 × 3–6 mm, ovoid; seeds c. 1,5 mm long, curved, winged and ridged. Figs 2 a–c, 10 a–d.

SELECTED CITATIONS

NATAL—3029 (Kokstad): Mount Currie distr., Kokstad (-CB), 4700 ft., 12/1883, *Tyson 1668* (PRE); Alfred distr., Weza, Zuurberg (-DA), c. 1 400 m, 29/11/1973, *Hilliard & Burt 7513* (E, K, MO, NU); Harding, farm Rooi Vaal (-DB), 4/1/1957, *Taylor 5278* (NBG).

TRANSKEI—3029 (Kokstad): Tabankulu distr., Tabankulu Mountain (-CD), c. 1 525 m, 18/11/1973, *Hilliard & Burt 7342* (E, K, MO, NU, PRE); Bizana distr., Fort Donald (-DC), 5000 ft., 12/1883, *Tyson 1668* (BOL, K, NBG, SAM).

—3127 (Lady Frere): Cala distr., Cala (-DA), 21/2/1910, *Pegler 1676* (PRE); Engcobo distr., near Engcobo (-DB), 4000 ft., 1/1896, *Bolus 8765* (PRE).

—3128 (Umtata): Tsolo distr., Chenkwe Mountain (-BA), 1896, *Flanagan 2865* (PRE); Umtata distr., Baziya Mountain (-CB), 2–3000 ft., *Baur 19* (K, SAM); ibidem, Mpolompo River valley, 1 370 m, 11/2/1981, *Hilliard & Burt 13932* (E, NU).

—3129 (Port St Johns): Flagstaff distr., near Flagstaff (-AB), 3/12/1928, *Hutchinson 1786* (BOL, K, PRE).

CAPE—3226 (Fort Beaufort): Baviaansrivierberg, Shore's Farm (-AC), 5000 ft., 19/4/1950, *Killick 846* (GRA, PRE); Bedford distr., Great Winterberg (-AD), 12, *Ecklon* (SAM); Katberg Pass (-DA), c. 1 525 m, 24/1/1979, *Hilliard & Burt 12353* (E, NU); Hogsback Forest Reserve (-DB), 9/12/1977, *Hilliard & Burt 10949* (E, K, NU, PRE); Between Keiskammahoek and Hogsback Forest Station, 22/11/1981, *Matthews 727* (NBG, NU); Old Katberg Pass, 5200 ft., 9/4/1898, *Galpin 2391* (GRA, PRE); Stockenstrom div., Willsdale, 11/1884, *Scully 111* (SAM).

—3227 (Stutterheim): Cathcart distr., Windvogelberg (-AC), 24/11/1944, *Whitworth s.n.* (BOL 2300); Guncuka forest (-CA), *van Jaarsveld 3735* (NBG); Amatola Mountains, Gaika's Kop (-CA), 29/12/1926, *Grant 3055* (BOL, GRA, PRE); Keiskammahoek distr., Rabula Forest, 15/12/1921, *Stayner 78* (GRA); Cata Forest Reserve, 3500 ft., 15/1/1948, *Story 3291* (PRE); Wolf Ridge, 4500 ft., 22/10/1965, *Wells 3231* (GRA, PRE); Thomas Mountain (-CA/-B), 1 200–1 400 m, 9/12/1981, *Hilliard & Burt 14790* (E, NU); Stutterheim distr., Evelyn valley (-CB), 13/1/1947, *Compton 19155* (NBG); Kologha Forest, 3500 ft., 27/11/1956, *Theron 2138* (PRE); Kabaku hills, 3100–3400 ft., 15/11/1942, *Acocks 9329* (PRE); Dohne Hill, 5000 ft., 1897, *Sim 20365* (NU, PRE); Mt. Kemp (-CB), c. 1 400 m, 14/12/1977, *Hilliard & Burt 11032* (E, K, NU, S); King William's Town distr., near King William's Town, summit of Pirie (-CC), 3000 ft., 11/1893, *Flanagan 2156* (BOL, PRE, SAM); Kubusie forest Reserve (-DA), 2000–3000 ft., 9/4/1972, *Thomas s.n.* (NBG).

Diascia rigescens ranges from southern Natal through the mountainous parts of Transkei to the mountains of the eastern Cape, between Cathcart, Stutterheim and King William's Town in the east and the Great Winterberg in the west. It favours moist places, particularly on the margins of forest

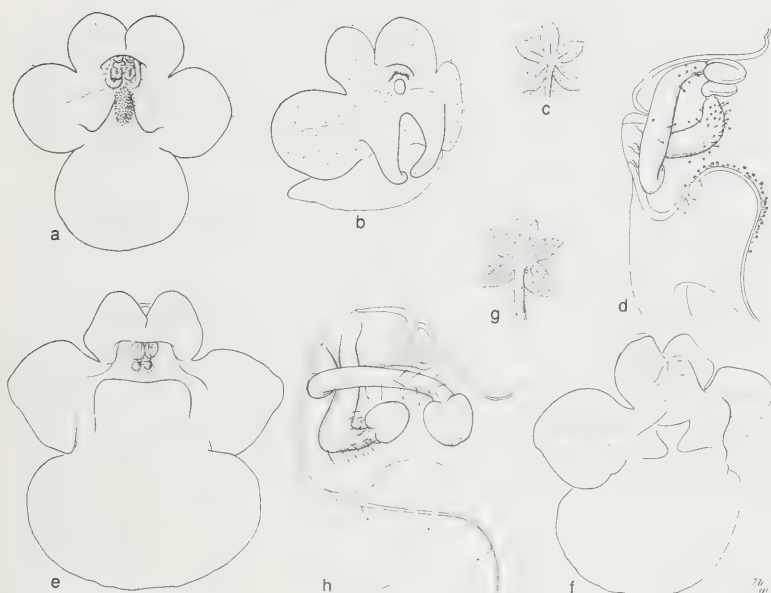


FIG. 10.

Diascia rigescens (Hilliard & Burt 12353); a, corolla, front view ($\times 2.5$); b, corolla, back view ($\times 2.5$); c, calyx ($\times 2.5$); d, 2 stamens and corolla base in section ($\times 12.5$). *D. personata* (Batten 628); e, corolla, front view ($\times 4$); f, corolla, back view ($\times 4$); g, calyx ($\times 4$); h, 2 stamens and corolla ($\times 13$).

patches. There appear to be local races of the species: specimens from Mount Kemp for instance are particularly fine and make splendid garden plants while specimens from the Zuurberg in southern Natal have less sturdy stems and smaller, paler, flowers. The Mount Kemp plant as well as those from Thomas Mountain, Hogsback, Dohne, Pirie Mountain and Keiskammahoek all have long bracts, and have been segregated as var. *bractescens*, but the distinction is not worth upholding.

Hiern described the corolla of *D. macowanii* (in synonymy above) as having "two small pouches"; this is not so; the spurs are merely infolded. MacOwan's specimen came from the Koonap river near Fort Beaufort and it is clearly the long-bracted strain of *D. rigescens*.

Diascia rigescens is very easily recognised by the short strongly raised keel covered in stalked yellow glands, and by the sessile leaves. The only

other species with sessile leaves, closely resembling these of *D. rigescens*, is *D. personata*, but the flowers are totally different.

21. ***Diascia personata*** Hilliard & Burt in Notes R. bot. Gdn Edinb. **41**: 313 (1983); Batten & Bokelmann, Wild Flow. E Cape Prov. 134 pl. 106, 4 (1966), as *D. rigescens*. Type: E Cape, East London, Beacon Bay, 9/10/1979, *Batten s.n.* (E, holo.; NU, iso.).

Stoloniferous perennial herb, stems 1 or 2 from the crown, simple below, sometimes branching above into a compound inflorescence, up to c. 1,3 m tall, 2–4 mm diam., erect, glabrous becoming glandular-puberulous on the inflorescence. *Leaves* crowded, mostly 18–53 × 6–15 mm, largest in the centre of the stem, lanceolate, apex acute, apiculate, base cordate, margins sharply serrate, glabrous, thick-textured, sessile. *Flowers* many in terminal racemes, sometimes compounded into panicles; bracts up to 2,5 × 1,25 mm, ovate, shortly acuminate; pedicels mostly 7–15 mm long, filiform, sharply ascending, glandular-puberulous mainly near the tip, the hairs scarcely 0,25 mm long. *Calyx* segments lanceolate, two anticus ones up to 2 × 1,25 mm, three posticus ones slightly smaller, glandular-puberulous. *Corolla* tube c. 2–2,5 mm long, base not invaginated, but pouched laterally above the entrance to the spurs, these c. 1,5 mm long, directed inwards towards each other, tips lacking dark sessile glands within; limb c. 7–12 × 8–15 mm, anticus lobe suborbicular, c. 3–5 × 6–10 mm, two lateral lobes ovate to suborbicular, c. 3–4 × 3,5–5 mm, two posticus lobes c. 2–4 × 2–2,5 mm, oblong to suborbicular, all pale pink, glabrous except for a few gland-tipped hairs outside, palate elevated into a transverse oblong pouch c. 2–2,5 mm deep at the margins, slightly depressed in the centre, closing the mouth of the tube, (the two inner angles of the pouch form the two spurs), “windows” two, one in the roof, one in the floor of the corolla tube, the upper (posticus) one concave, c. 0,5–1 mm deep, the lower one shallower. *Stamens* curved erect, hidden in the upper window; filaments of the anticus pair c. 2,5 mm long, glandular-pubescent above; anthers 0,75 mm long; filaments of the posticus pair c. 2 mm long, directed forward, the tips sharply curved erect, glandular-pubescent; anthers 0,5 mm long; pollen grey-green. *Ovary* c. 1,25 × 1 mm, deltoid in outline, ovules many in each loculus; style c. 1 mm long, stigma capitate, lying between the anthers. *Capsule* c. 3–7 × 3–4 mm, ovoid; seeds 1,75 mm long, curved, narrowly winged, ridged. Fig. 10 e–h.

SELECTED CITATIONS

TRANSKEI—3228 (Butterworth): Kentani distr., Qolora Mouth, near Black Rock Cave (-CB), 50 ft., 9/7/1907, *Pegler 1439* (BM, GRA, K, PRE, SAM).

CAPE—3327 (Peggie): East London distr., East London (-BB), 27/1/1979, *Hilliard & Burt 12406* (E, NU); *ibidem*, 26/12/1941, *Barker 1511* (BOL, NBG); *Bonza*

Bay and Gonubie, *Batten s.n.* (NBG); Igoda Bridge, 2000 ft., 2/8/1966, *Bayliss 3512* (NBG); Amalinda, Stony Drift Creek, c. 150 ft., 5/5/1967, *Acocks 23884* (PRE); King William's Town distr., Mount Coke (-CD), 2000 ft., 11/1892, *Sim 1425* (BOL, PRE); ibidem, 1500 ft., 7/1881, *Tyson 974* (BOL, NBG); Komgha distr., 10 miles W of Kei Mouth (-DB), 24/11/1945, *Compton 17602* (NBG); Near Komgha, 1800 ft., 2/1890, *Flanagan 518* (BOL, GRA, NBG, PRE, SAM); Komgha, 2000 ft., 8/1/1895, *Schlechter 6215* (GRA); Komgha, 1/8/1895, *Krook* in herb. *Penther 3093* (K).

Diascia personata grows in damp rough grassland near the sea or on damp grassy slopes inland, up to an altitude of c. 600 m. It appears to be confined to a small area stretching from Kentani district in Transkei across the Kei to Komgha, King William's Town and East London. It is still common around East London, but its habitat is being destroyed by urban expansion.

The flowers are small (late flowers may be even smaller than those described) but the morphology of the corolla is no less complicated than that of any of its congeners, and in some ways it is even more remarkable. In no other species known to us is the corolla personate. This pouching of the palate actually forms the two small spurs; in addition, there are two shallow depressions at the base of the lateral lobes where the two lateral spurs usually develop. The pouched palate almost masks the essential organs; the anthers, which arch up into the window cavity below the lower lip, are just visible above the depression in the centre of the palate. The two lateral depressions are also visible, but not the openings to the spurs, which lie hidden under the pouch that forms them. The yellow window above the stamens is invisible, and so is the second window in the floor of the corolla tube. When the lower lip is depressed, as it would be should an insect land on the palate, the two windows more or less merge optically to the human eye and the greenish anthers appear, centrally placed against a yellow background flanked by the usual reddish-purple or maroon markings.

The relationship of *D. personata* seems to lie with *D. rigescens*: they have similar vegetative parts and similar capsules and seeds. They diverge sharply in floral morphology, which is surely a response to different insect pollinators.

Diascia personata was first collected by Tyson in 1881, Flanagan in 1890, Sim in 1892, Schlechter and Krook in 1895, and by many another this century. It has even been illustrated (Batten & Bokelmann, loc. cit.), but nevertheless it has persistently been misidentified as *D. rigescens*, despite its totally different floral structure, which is easily detected even in dried material.

GROUP 7.

22. *Diascia macrophylla* (Thunb.) Spreng., Syst. Veg. 2: 800 (1825);

Benth. in Hook., *Comp. Bot. Mag.* 2: 17 (1836) et in DC., *Prodr.* 10: 258 (1846); Hiern in Thiselton-Dyer, *Fl. Cap.* 4 (2): 163 (1904). Type: Cape, Calvinia, near a river between Bokkeland and Hantam, *Thunberg*.

Hemimeris macrophylla Thunb., *Nov. Gen. Pl.* 4: 76 (1784), *Prodr. Pl. Cap.* 105 (1800) et *Fl. Cap.* 484 (1823).

Annual herb, main stem c. 10–600 mm long, 1–4 mm diam., occasionally simple, usually branching low down, weak, decumbent or ascending, glabrous or glandular-puberulous, glandular-puberulous on the inflorescence axes. *Leaves* in up to 7 pairs on each branch, c. 10–45 × 8–28 mm, ovate, apex acute to obtuse, base subcordate, margins subentire to sharply serrate, glabrous or with a few gland-tipped hairs on the lower margins and main veins below; petioles glandular-puberulous, up to 15 mm long, decreasing rapidly in length upwards, uppermost leaves subsessile. *Flowers* many, in long terminal racemes, simple or loosely paniced; lowermost bract leaf-like, up to c. 14 × 7 mm, upper ones becoming rapidly smaller, cordate-ovate, acuminate, glandular-puberulous; pedicels c. 15–30 mm long, filiform, glandular-puberulous, patent or deflexed, tip abruptly upcurved. *Calyx* segments lanceolate, acute, anticus pair 3 × 1,5–2 mm, three posticus ones slightly smaller, all glandular-puberulous. *Corolla* tube 4–5 mm long, invaginated then partly turned out again, two lateral spurs 10–13 mm long, straight, directed straight down, with dark sessile glands inside on one face; limb c. 14–20 × 14–17 mm, anticus lobe c. 7–11 × 7–11,5 mm, two lateral lobes 4,5–6 × 4–5 mm, two posticus lobes 4–5 × 2–3 mm, all lobes ± oblong, the posticus pair fused nearly to the apex, corolla “mauve”, “purplish-blue”, “pale blue”, “mauvy-blue”, “deep mauve”, rarely pink, glabrous outside, inside with two large patches of dark sessile glands laterally placed at the base of the anticus lobe, these glands also present at the upper lateral sinuses; “window” deltoid in outline, concave, with two lateral yellow patches themselves concave. *Stamens* projecting forward; filaments 3,25–4 mm long, glandular-puberulous, hairs sometimes sparse; anthers 0,5 mm long, cohering strongly. *Ovary* 1,5–2 × 1–1,5 mm, deltoid in outline; ovules many in each loculus, style 2,5 mm long, stigma capitate, lying between the anthers. *Capsules* 8–10 × 3–4 mm, narrowly elliptic; seeds 1 mm long, curved, ridged.

SELECTED CITATIONS

CAPE—3119 (Calvinia): Between Oorlog's Kloof and Papkuilsfontein (-AC), 11/1929, *Leipoldt 3445* (BOL); Akkerendam, lower slopes of Hantam Mountains (-BD), 22/7/1961, *Barker 9316* (NBG); Near Agter Hantamsberg, Moordenaarspoort, 9/1952, *Lewis 3871* (SAM); c. 28 miles N of Calvinia, 25/9/1952, *Middlemost 1772* (BOL, NBG); 21 miles W of Calvinia, 24/9/52, *Maguire 2533* (NBG). —3120 (Williston): Beyond Middlepost, Quaga's Pass (-CC), 29/9/1929, *Grant &*

Theiler 4899 (BOL, mixed with *D. dissimulans*); 14.7 miles along old road from Middelpost to Calvinia, 2/10/1974, *Hiemstra* 593 (NBG).

—3220 (Sutherland): A few miles north of Qaggafontein, farm Vierfontein (-AB), 4700 ft., 23/9/1981, *Snijman* 526 (NBG).

Diascia macrophylla appears to be relatively common, though probably highly localised, from the Hantamsberge to the northern part of the Roggeveld Mountains, where it has been recorded as growing under bushes on dry flats, in damp rock crevices beside a stream, and in decomposed granite, flowering in spring, between July and October. It is allied to *D. veronicoides*, *D. dissimulans* and *D. parviflora*, but is easily recognised by its exceptionally long spurs.

23. *Diascia parviflora* Benth. in Hook., Comp. Bot. Mag. 2: 17 (1836) et in DC., Prodr. 10: 258 (1846); Hiern in Thiselton-Dyer, Fl. Cap. 4 (2): 154 (1904). Lectotype: Cape, Worcester div., Hex River Mountains, *Drège* (K).

D. burchellii Benth. in DC., Prodr. 10: 258 (1846); Hiern in Thiselton-Dyer, Fl. Cap. 4 (2): 154 (1904). Type: Cape, Sutherland div., between Kuilen Berg and the Great Reed river, *Burchell* 1364 (K).

Annual herb, main stem 80–400 mm long, 1–3 mm diam., occasionally simple, usually branching low down, weak, decumbent or ascending, glabrous, glandular-puberulous on the inflorescence axis. *Leaves* in 3–4 pairs on each branch, c. 7–45 × 7–35 mm, ovate, apex acute or subacute, base truncate to subcordate, margins subentire to sharply serrate, glabrous or with a few gland-tipped hairs below on the main veins; petioles up to c. 30 mm long, decreasing rapidly in length upwards, uppermost leaves sessile, sparsely glandular-pubescent. *Flowers* many, in terminal racemes, simple or loosely paniced; lowermost bract leaf-like, c. 4 × 2.5 mm, the upper ones smaller, lanceolate, shortly acuminate, lower surface glandular-puberulous; pedicels mostly 5–10 mm long, filiform, glandular-puberulous, usually ascending at an angle of c. 45°, sometimes wide-spreading and then tips abruptly upcurved. *Calyx* segments lanceolate, acute, anticus pair 2.5–2.75 × 1–1.25 mm, three posticus ones slightly smaller, sparsely glandular-puberulous outside. *Corolla* tube 1.5–2 mm long, invaginated then partly turned out again; two lateral spurs c. 0.5–1 × 1 mm, slightly curved inwards, with dark sessile glands inside on the outer face; limb c. 6–12 × 6–9 mm, anticus lobe c. 3–7 × 3–6 mm, subrotund, two lateral lobes c. 2–3 × 2.5–4 mm, ovate, two posticus lobes c. 1.5–2 × 1–2 mm, oblong, fused nearly to the apex, corolla “violet” or “reddish-purple”, glabrous outside, inside with two patches of dark sessile glands below the upper lateral sinuses and two small patches laterally placed on the outer face of the palate, which is probably slightly raised; “window” shallowly concave with two lateral el-

liptic yellow patches. *Stamens* projecting forward; filaments 2–3 mm long, posticous filaments longer than anticous, sharply curved at tip to bring the anthers into the same plane as the anticous anthers, glabrous or minutely glandular-puberulous, anthers 0,25–0,5 mm long, cohering strongly. *Ovary* 1,5–2 × 1–1,25 mm, deltoid in outline, ovules many in each loculus; style 1–1,5 mm long, stigma capitate, lying between the anthers. *Capsules* 5–8 × 2–3 mm, oblanceolate in outline; seeds 0,5 mm long, curved, ridged.

SELECTED CITATIONS

- CAPE—3119 (Calvinia): Between Oorlog's Kloof and Papkuilsfontein (-AC), 9/1929, *Leipoldt 3451* (BOL).
 —3120 (Williston): Near Middlepost, Elandsfontein farm (-CC), 28/9/1929, *Grant & Theiler 4897* (BOL).
 —3218 (Clanwilliam): Between Grey's Pass and Graafwater (-DB), 8/1940, *Leipoldt 3450* (BOL).
 —3219 (Wuppertal): Clanwilliam div., Cedarberg, Matjiesrivier (-AC), 9/1928, *Wagener 177* (NBG); S Cedarberg, Krom River (-CB), 2/10/1952, *Esterhuysen 20550* (BOL).
 —3319 (Worcester): Baviaansberg (-BA), 4000 ft., 4/11/1962, *Esterhuysen 29785* (BOL); Ceres div., Therons Berg (-BC), 21/9/1941, *Walgate 293* (NBG); Leeuwfontein, 26/9/1944, *Barker 3009* (NBG); Between Osplaats and Tunnel Sidings (-BC), 8/1915, *Rogers 16730* (BOL); Worcester div., Karoo Garden (-CB), 24/9/1949, *Barker 5935* (BOL, NBG); Hex River (-DA), 1700 ft., 10/1893, *Bolus 7890* (BOL).
 —3320 (Montagu): Laingsburg div., Ngaap Kop (-BA), 3500 ft., 2/9/40, *Compton 9279* (NBG); Whitehill ridge, 9/9/1935, *Compton 5625* (NBG); Between Matjiesfontein and Sutherland, 9/10/1928, *Hutchinson 677* (BOL, K); Montagu (-CC), 8/1918, *Page BOL 15627* (BOL); Cogman's Kloof, 10/8/1954, *Middlemost 1869* (NBG).
 —3321 (Ladismith): Uniondale div., Seven Weeks Poort (-AD), 9/1912, *Phillips 1500* (SAM); N of Rooiberg, Little Karoo (-CB), 4/8/1954, *Wurts 1230* (NBG); Hoeks road, 2000 ft., 2/9/1953, *Wurts 1128* (NBG).
 —3322 (Oudtshoorn): De Rust, farm Doornkraal (-BC), 400 m, 22/7/1973, *Dahlstrand 2437* (PRE); Oudtshoorn (-CA), 8/1912, *Rogers 4639* (BOL); Cango Caves, 16/10/1928, *Gillett 1690* (BOL).
 —3324 (Steytlerville): Willowmore distr., above Kouga (-CB), 1000 ft., 13/9/1973, *Bayliss 6030* (NBG).
 —3419 (Caledon): Rivier Zonder Einde and Hassaquaskloof (-BB), *Zeyher 3478* (K, SAM).

Diascia parviflora is widely distributed in the western and south western Cape and the Little Karoo, from Calvinia south to Worcester and Caledon and east to Seven Weeks Poort in Uniondale division. It grows in damp and partially shaded places, sometimes in the shelter of cliffs or rocks, and flowers in spring, between July and October. Like so many annuals, it is very variable in stature and leaf size, and may flower in the seedling stage; there is considerable variation too in the size of the corolla limb. The names *D. parviflora* and *D. burchellii* were applied to specimens at the two extremes of the range.

The filaments of the posticous pair of stamens are abruptly curved and

somewhat thickened near the tips (this brings the anthers into the horizontal position). In one specimen on a sheet collected by E. P. Phillips in Seven Weeks Poort, this thickening is drawn out into a little spur 0.5 mm long, and thus approaches the branched filaments of *D. dissimulans* (see under that species).

24. *Diascia dissimulans* Hilliard & Burt, species nova; *D. parviflorae* Benth. affinis sed characteribus sequentibus diagnoscenda: calyx glanduloso-pubescent pilis c. 0.25–0.4 mm longis (nec glanduloso-puberulus pilis 0.01 mm longis), filamenta postica distincte ramosa (nec flexa tantum, ad apices incrassata), capsulae lineares, 12–18 mm longa (nec 5–8 mm). A *D. veronicoidei* calcaribus 2–3 mm longis introrsum curvatis (nec 4 mm longis deorsum et extrorsum curvatis), filamentis ramosis (nec simplicibus), seminibus curvatis costatis alatis (nec rectis muricatis) distinguitur.

Herba annua; caulis ad 450 mm altus, 1–2.25 mm diam., simplex vel prope basin ramosus, debilis, glaber vel glanduloso-pubescent vel pilis ad axes inflorescentiae restrictis. *Folia* in quoque ramo 3–4—jugata, c. 8–25 × 6–22 mm, ovata, apice acuto vel subacuto, basi subcordata, marginibus subintegris vel acute serratis, pilis paucis glandulosis in marginibus basin versus et inferne in costis exceptis glabra. *Flores* numerosi in racemos terminales simplices vel laxe paniculati dispositi; bractea infima foliacea, c. 9 × 7 mm, superiores minores, cordato-ovatae, acutae vel acutissimae, subtus glanduloso-pubescentes; pedicelli c. 10–15 mm longi, filiformes, glanduloso-pubescentes, patentes vel deflexi, apicibus abrupte sursum curvatis. *Calyx* 5-partitus; segmenta lanceolate, acuta, duo antica 2.75–3 × 1–1.25 mm, tria postica paulo minora, omnia glanduloso-pubescentia, pilis interdum ad dimidium inferius restrictis. *Corolla* tubo 3–4 mm longo invaginato; calcar 2–3 mm longa, leviter introrsum curvata intus facie exteriore glandulis fuscis sessilibus praedita; limbus c. 10–14 × 9–12 mm, violaceo-caeruleus, extra glaber, intus glandulis nigris lateraliter ad basin lobo antico et ad sinus superiores laterales praeditus, lobo antico 5–8 × 5–8 mm, lateralibus 3–4 × 3.75 × 5 mm, posticis 3–3.35 × 2 mm fere ad apices conjunctis, omnibus oblongis; fenestra leviter concava notis duobus lateralibus luteis rubro-purpureo-circumcinctis. *Stamina* 4, porrecta; filamenta antica 2 mm longa, postica 3.25 mm medio ramosa antheras fertiles in ramo superiore gerentia, omnia glanduloso-puberula, pilis interdum parcis; antherae 0.3 mm longae, inter se valde cohaerentes. *Ovarium* 1.5–2 × 1 mm, stylus 1–1.25 mm; ovula in loculo multa; stigma capitatum, inter antheras positum. *Capsula* 12–18 × 2.25–3 mm, linearia; semina 1 mm longa, curvata, anguste alta et costata.

Type: Calvinia distr., S of Calvinia, flats near Augustfontein Mt., 21/7.1961, *Barker 9302* (NBG).

Annual herb, main stem up to 450 mm tall, 1–2,25 mm diam., simple or branching near the base, weak, glabrous or glandular-pubescent, or hairs confined to the inflorescence axes. *Leaves* in 3–4 pairs on each branch, c. $8\text{--}25 \times 6\text{--}22$ mm, ovate, apex acute or subacute, base subcordate, margins subentire to sharply serrate, glabrous except for a few glandular hairs on the lower margins and main veins below; petioles up to 20 mm long, decreasing rapidly in length upwards, uppermost leaves sessile, glandular-pubescent. *Flowers* many, in terminal racemes, simple or loosely paniced; lowermost bract leaf-like, c. 9×7 mm, the upper ones smaller, cordate-ovate, very acute to acuminate, lower surface glandular-pubescent; pedicels c. 10–15 mm long, filiform, glandular-pubescent, patent or deflexed, the tips abruptly upcurved. *Calyx* segments lanceolate, acute, anticus pair $2,75\text{--}3 \times 1\text{--}1,25$ mm, three posticus ones slightly smaller, glandular-pubescent, hairs sometimes $\pm$ confined to lower half. *Corolla* tube 3–4 mm long, invaginated then partly turned out again; two lateral spurs 2–3 mm long, slightly curved inwards, with dark sessile glands inside on the outer face; limb c. $10\text{--}14 \times 9\text{--}12$ mm, anticus lobe $5\text{--}8 \times 5\text{--}8$ mm, two lateral lobes $3\text{--}4 \times 3,75\text{--}5$ mm, two posticus lobes $3\text{--}3,5 \times 2$ mm, fused nearly to the apex, all $\pm$ oblong, violet-blue, glabrous outside, inside with two patches of dark sessile glands laterally placed at the base of the anticus lobe, and similar glands around the two upper lateral sinuses; “window” shallowly concave with two lateral elliptic yellow patches flanked with red-purple. *Stamens* projecting forward, filaments of anticus pair 2 mm long, those of posticus pair c. 3,25 mm long, branched about halfway and bearing the fully fertile anthers horizontally on the upper branch, all filaments glandular-puberulous, hairs sometimes sparse, anthers c. 0,3 mm long, cohering strongly. *Ovary* $1,5\text{--}2 \times 1$ mm, style 1–1,25 mm, ovules many in each loculus; stigma capitate, lying between the anthers. *Capsules* $12\text{--}18 \times 2,25\text{--}3$ mm, linear; seeds 1 mm long, curved, narrowly winged and ridged.

CITATIONS

CAPE—3119 (Calvinia): 21 miles W of Calvinia, Zoetwater (-AD), 24/9/1952, Maguire 1912 (NBG); Near Agter Hantamsberg, Moordenaarspoort (-BD), 27/9/1952, Lewis 3872 (SAM); Lokenberg (-CA), 29/8/1941, Esterhuysen 5746 (BOL).

—3120 (Williston): Beyond Middlepost, summit of Quaga's Pass, 29/9/1929, Grant & Theiler 4899 (BOL, mixed with *D. macrophylla*).

Diascia dissimulans is known only from Calvinia division of the western Cape; the collectors gave no ecological notes. All five sheets cited above were misdetermined as *D. veronicoides*. *Diascia dissimulans* resembles *D. veronicoides* because both species have patent or deflexed pedicels abruptly upcurved at the tips to bear the linear capsules erect. The seeds are remark-

ably different: those of *D. dissimulans* are curved and narrowly winged and ridged, as in nearly all species of *Diascia*, while those of *D. veronicoides* are oblong, straight, flat or folded longitudinally, and muricate. The two species differ further in the size, shape and stance of the spurs: 2–3 mm long in *D. dissimulans* and curved inwards; c. 4 mm long in *D. veronicoides* and curved out and down; *D. veronicoides* also has simple filaments, not branched. It is *D. parviflora* that *D. dissimulans* strongly resembles in floral form, and this is probably where its immediate relationship lies. The flowers of *D. dissimulans* are possibly always slightly larger than those of *D. parviflora*, but the only real difference (apart from some difference in indumentum on the calyx) lies in the filaments: the posticous filaments of *D. dissimulans* are distinctly branched, whereas those of *D. parviflora* are merely curved and thickened near the tips. We have seen a specimen of *D. parviflora* in which this thickening is drawn out into a short spur, suggesting the manner in which the branched filaments of *D. dissimulans* have evolved. The function of both the curving and the branching is to bring the anthers into the horizontal position. The capsules of *D. dissimulans* are linear, while those of *D. parviflora* are oblanceolate in outline, and much shorter, 5–8 mm, not 12–18 mm, and relatively broader. There is a slight difference too in seed morphology: both have curved, ridged seeds, but those of *D. dissimulans* are narrowly winged as well.

Diascia dissimulans appears to be a local endemic that has evolved from *D. parviflora* at the northern limit of that relatively widespread species.

25. *Diascia veronicoides* Schltr. in Engl., Bot. Jahrb. 27: 178 (1900); Hiern in Thiselton-Dyer, Fl. Cap. 4 (2): 164 (1904). Type: Cape, Vanrhynsdorp div., Karreebergen, alt. 2000 ft., 18/7/1896, Schlechter 8203 (BOL, E, K, PRE).

Annual herb, main stem 10–750 mm long, 1–4 mm diam., occasionally simple, usually branching low down, weak, decumbent or ascending, glabrous, glandular-puberulous on the inflorescence axes. Leaves in 3–4 pairs on each branch, c. 10–50 × 10–45 mm, ovate, apex acute or subacute, base truncate to subcordate, margins subentire to sharply serrate, glabrous or with a few gland-tipped hairs on the lower margins and veins below; petioles sparsely glandular-pubescent, up to 20 mm long, decreasing rapidly in length, uppermost leaves subsessile. Flowers many, in long terminal racemes, simple or loosely paniced; lowermost bract leaf-like, upper ones becoming rapidly smaller, cordate-ovate, acuminate, sharply toothed, lower surface glandular-puberulous; pedicels c. 8–15 mm long, filiform, glabrous to sparsely glandular-puberulous, patent or deflexed, tip abruptly upcurved in fruit. Calyx lobes lanceolate, acute to shortly acuminate, anticus pair

2–3,5 × 0,5–1,25 mm, three posticous ones slightly smaller, glabrous or with a few glandular hairs at the base. *Corolla* tube c. 3 mm long, invaginated then partly turned out again; two lateral spurs c. 4 mm long, slightly curved, directed out then down, with dark sessile glands inside on one face; limb c. 10–13 × 9–11 mm, anticous lobe c. 4–5,5 × 5–8 mm, subrotund, lateral lobes c. 3–3,5 × 3–4,5 mm, subrotund, two posticous lobes 2–3 × 1,5–2 mm, fused nearly to the apex, corolla violet-blue, glabrous outside, inside with two patches of dark sessile glands laterally placed at the base of the anticous lobe, these glands also present below the upper sinuses; “window” concave, with two laterally placed elliptic yellow patches. *Stamens* projecting forward; filaments 2 mm long, glandular-puberulous, anthers 0,5 mm long, cohering strongly. *Ovary* 2 × 1 mm, deltoid in outline, ovules many in each loculus; style 1 mm long, stigma capitate, lying between the anthers. *Capsules* 9–16 × 1–2 mm, linear; seeds 1–1,25 × 0,3 mm, oblong, straight, flat or longitudinally folded, muricate. Fig. 2 m-o.

CITATIONS

CAPE—3017 (Hondeklipbaai): Namaqualand, Bowesdorp (-BB), 9/1941, *Stokoe* SAM 57696 (SAM).

—3118 (Vanrhynsdorp): Between Vanrhynsdorp and Klaver, Wiedouw River (-DA), 7/1948, *Lewis* 3033 (SAM).

—3119 (Calvinia): Van Rhynsdorp div., Van Rhyn's Pass (-AC), 25/7/1941, *Esterhuysen* 5281 (BOL); ibidem, *Bond* 1159 (NBG); ibidem, 28/8/1941, *Compton* 11552 (NBG); Between Oorlog's Kloof and Papkuilsfontein, 9/1939, *Leipoldt* 3444 (BOL); Nieuwoudtville, Van Wyk's farm, 9/1930, *Lavis* s.n. (20671 in herb. BOL, K); North of Nieuwoudtville, near Grasberg, 8/8/1961, *Barker* 9346 (NBG); 5 miles E of Nieuwoudtville, 24/8/1950, *Barker* 6536 (NBG); Hantam Mountains (-BC), 28/9/1929, *Grant & Theiler* 4890 (BOL); Akkerendam, lower slopes of Hantam Mountains (-BD), 22/7/1961, *Lewis* 5809 (NBG); SW of Nieuwoudtville on escarpment, Uitkomst Farm, 27/9/1970, *Barker* 10372 (NBG).

—3218 (Clanwilliam): Between Pakhuis and Doorn River (-BB), 15/8/1897, *Schlechter* 10867 (BOL).

—3219 (Wuppertal): Bidouw (-AB), 7/9/1953, *Compton* 24233 (NBG); Koudeberg near Wuppertal (-AC), 4/10/1897, *Bolus* 9065 (BOL, K, NBG); Road to Wuppertal from Clanwilliam, 9/1933, *Leipoldt* 2087 (BOL).

—3318 (Cape Town): Piquetberg distr., 8 miles N of Porterville, Nurust Farm (-BB), 22/9/1966, *Loubser* 1087 (NBG).

—3220 (Sutherland): Houthoek (-CA), 14/8/1968, *Hanekom* 1084 (K).

Diascia veronicoides is confined to the western Cape, from about Bowesdorp, north of the Kamiesberg, south to Porterville, north east of the Great Winterhoek Mountains. The collectors have given no ecological notes, but the plants probably grow in moist sandy places, and flower in spring, between July and October.

Diascia veronicoides shares with *D. dissimulans* and *D. macrophylla* the character of patent or deflexed pedicels sharply upturned at the tips to carry

the capsules erect. The capsules of *D. veronicoides* are narrowly linear, and are not easily confused with those of any species other than *D. dissimulans*. However, the capsules of *D. dissimulans* are always broader than those of *D. veronicoides* (2.25–3 mm, not 1–2 mm) and contain the curved ribbed seeds that are characteristic of most species of *Diascia*; the seeds of *D. veronicoides* are quite different: oblong, straight, muricate. For further distinguishing characters, see under *D. dissimulans*.

26. *Diascia alonsooides* Benth. in Hook., Comp. Bot. Mag. 2: 17 (1836) et in DC., Prodr. 10: 259 (1846); Hiern in Thiselton-Dyer, Fl. Cap. 4 (2): 157 (1904). Type: Cape, Sneeuwbergen, an felsigen Oertern, 4000–5000 Fuss Höhe, September, *Drège* (K, holo.; E, SAM, iso.).

D. tysonii Hiern in Thiselton-Dyer, Fl. Cap. 4 (2): 143 (1904). Type: Cape, Murraysburg div., on a stony declivity near Murraysburg, 4100 ft., 8/1879, *Tyson 430* (BM, BOL, K).

Annual herb, main stem c. 150–400 mm long, up to c. 2 mm diam., branching from the base, erect or decumbent, glabrous, becoming glandular-puberulous on the inflorescence axis. *Leaves* in 3–4 pairs on each branch, c. 15–30 × 7–21 mm, ovate, apex subacute, base ± truncate to subcordate-cuneate, margins subentire to sharply serrate, glabrous, or with a few gland-tipped hairs below on the margins and veins near the base; petioles sparsely glandular-puberulous, up to 15 mm long, length rapidly decreasing upwards, uppermost leaves subsessile. *Flowers* many in terminal racemes, loosely paniced; lowermost bract leaf-like, c. 4 × 9 mm, the upper ones becoming smaller, ovate-lanceolate, shortly acuminate, base cordate-clasping, lower surfaces glandular-puberulous; pedicels up to c. 20 mm long, filiform, glandular-puberulous, often somewhat spreading, then tips upcurved in fruit. *Calyx* segments lanceolate, acute, anticus pair c. 2.5 × 0.75–1 mm, three posticus ones slightly smaller, a few small gland-tipped hairs near the base. *Corolla* subrotate, slightly bilabiate, without pouches or spurs, c. 12 mm diam., anticus lobe c. 4.5 × 5 mm, two lateral lobes c. 4 × 5 mm, two posticus lobes c. 5 × 4 mm, joined for half their length, all subrotund, probably rose-pink, glabrous and without dark sessile glands; “windows” two, one at the base of each posticus lobe, ± ovate in outline. *Stamens* projecting forward, filaments of the anticus pair 2 mm long, of posticus pair c. 4 mm, sharply bent c. 1 mm from the apex and strongly thickened there, all villous; anticus anthers c. 0.75 mm long, posticus ones a trifle smaller, all four cohering strongly. *Ovary* 1 × 0.75 mm, ovules many in each loculus, style 2 mm, stigma capitate, lying between the anthers. *Capsule* c. 7 × 2 mm, oblong-elliptic in outline; seeds c. 1 mm long, curved, ridged.

CITATION

CAPE—3220 (Sutherland): Great Reed River (-BB), 20/8/1811, *Burchell* 1373 (K).

Bentham (op. cit.) described the corolla of *D. alonsooides* as “*brevissime bifossulatis*” and Hiern described that of *D. tysonii* as having “two very small pouches at the base”, but we have not been able to detect either depressions or pouches in the material available to us. Even the two yellow windows are plane, whereas in all other species in this Section the window is at least shallowly concave.

It is extraordinary that Hiern should have described the specimen Tyson collected at Murraysburg as a new species when he cites the same collection (Tyson 430) under *D. alonsooides*. Murraysburg, site of Tyson’s collection, lies only a few kilometres from the western end of the Sneeuwberg, where Drège collected. We have seen only the types of the two names and Burchell’s collection from the Great Reed River (Groot Riet rivier) but Hiern also cites a collection made by Scully in Little Namaqualand. This is a likely distributional range, west (and probably east too) across the mountains.

Diascia alonsooides is allied to *D. parviflora* and *D. dissimulans*, which are at once distinguished by their more markedly bilabiate and shortly spurred corollas patterned with patches of dark glands.

IMPERFECTLY KNOWN TAXON

Diascia rigescens var. *montana* Diels in Engl., Bot. Jahrb. 23: 471 (1897). Type “Sulu-Natal”, Ibotwana, 2 000–2 200 m, Jan. 1891, *Thode* 69 (B†). We have failed to trace either an isotype or the locality from which the plant came.

EXCLUDED SPECIES

Diascia integrifolia [Spreng. ex] Ecklon in S. Afr. Quarterly Jnl. 4: 369 (1830), nomen.

Hiern [in Fl. Cap. 4 (2): 164, 1904] mentions this name at the end of *Diascia*, and says that the plant, found by Ecklon in Uitenhage district, is unknown to him. There are two sheets in Stockholm (S), one labelled Cape, *Zeyher*, *Diascia integrifolia*, the other from Uitenhage district, 1828, *Ecklon*, and written up as *D. integrifolia* Spr., n. sp. (not in Sprengel’s hand). The plant proves to be *Tylophora lycioides* Decne., in the Asclepiadaceae.

Diascia denticulata Benth. in Hook., Comp. Bot. Mag. 2: 18 (1836) and in DC., Prodr. 10: 259 (1846); Hiern in Thiselton-Dyer, Fl. Cap. 4 (2): 163 (1904) = *Nemesia denticulata* (Benth.) Fourcade in Mem. bot. Surv. S. Afr. 20: 73 (1941).

Diascia rotundifolia Hiern in Thiselton-Dyer, Fl. Cap. 4 (2): 152 (1904)
= *Diclis rotundifolia* (Hiern) Hilliard & Burt in Notes R. bot. Gdn Edinb.
37: 313 (1979).

APPENDIX

ALONSOA IN SOUTH AFRICA

The genus *Schistanthe* was established by Kunze in 1842, being based on a plant grown in the Botanic Garden at Leipzig; the seed had come from South Africa and had been given to Kunze by Lehmann of Hamburg. Kunze differentiated his genus from *Alonsoa* by the resupinate corolla being completely split between the morphologically upper lobes (not just divided nearly to the base), by the positionally upper lobes being saccate at the base, and by the capsule being ovate, obtuse, emarginate. The description is good and detailed: the resupinate corolla and seeds exactly fit *Alonsoa*, and we now know that the corolla in *Alonsoa* may also be split to the base. Considering the range of variation of pouches or spurs and of fruit shape in *Diascia*, Bentham (1876) was justified in accepting a similar range in *Alonsoa* and in reducing *Schistanthe* to synonymy. In this he was followed by Wettstein (1894) and Hiern (1904) and by all other authors. But Bentham also initiated the doubt that has been thrown on *Alonsoa* as a South African native. Wettstein (1894) and Hiern (1904) were apparently alone in their acceptance of it. Phillips (1926) said "it has been recorded from Uitenhage", but dropped it later (1951) and it is absent from the latest account of South African genera (Dyer, 1975). Baillon (1888), Lemée (1929) and Airy-Shaw (1966) all list *Schistanthe* as a synonym of *Alonsoa* and say that the genus is S. American.

Hiern (1904) quite correctly cited Zeyher 3485 from "woody gorges about Uitenhage" as belonging to *Alonsoa peduncularis* (Kunze) Wettstein. It agrees well with Kunze's description and matches a sheet in the Kew herbarium that had been cultivated at St. Petersburg as *Schistanthe*. Zeyher's specimen is in fruit, and it seems quite probable that it was the source of the seed that Kunze received from Lehmann. It is difficult to believe that a South American species of nothing but ornamental value had been cultivated at Uitenhage in the 1830's and had established itself as an alien. That is highly improbable; proof that it was not so lies in the fact that this South African plant is not the same as any South American species of *Alonsoa*. It is clearly a close ally, but neither the most similar species, *A. incisifolia* Ruiz & Pavon, nor any others have yellow pouches on the corolla; these are carefully described by Kunze from his living material: they must have been there. Further, the leaves and habit of the South African plant, though similar to, are not the same as those of any South American species. Whether

Alonsoa peduncularis has survived to the present day can only be settled by careful search: it seems not to have been collected since Zeyher's time. There are, however, no good grounds for doubting that there was such a plant or that it was native around Uitenhage. A translation of Kunze's original description is appended in the hope of encouraging botanists to search for this most interesting plant.

Alonsoa peduncularis (Kunze) Wettstein in Engler & Prantl, *Natürl. Pflanzenfam.* 4 (3B): 53 (1894) [sphalm. *petiolaris*]; Hiern in *Thiselton-Dyer, Fl. Cap.* 4 (2): 138 (1904)

Schistanthe peduncularis Kunze [in *Index sem. hort. univ. Lips.* 1841—n.v.] in *Linnaea* 16, *Litt. Ber.* 109 (1842); Benth. in *DC., Prodr.* 10: 251 (1846).

"*Schistanthe peduncularis* Kze. A new genus closest to *Alonsoa*, an American genus, agreeing, amongst other things, particularly in the unequally 5-partite calyx and resupinate corolla, not just split below to the base, but altogether disjunct (which, amongst the characters attributed to *Alonsoa*, I have sought in vain); but differs in the corolla being bisaccate at the base of the anticous or upper lobe and the capsule ovate, obtuse and emarginate. A genus of the tribe Verbasceae, in which it must be included, it approaches the Hemimerideae, especially *Diascia*.

"Perennial herb with the habit almost of *Alonsoa urticifolia*, a foot high, with branched tetragonous stem; leaves petiolate ovate acute subcordate at the base unequally and subduplicate-incised-serrate glabrous; peduncles solitary patent-divaricate almost an inch long. Corolla 6 lines [12 mm] in diameter, pale scarlet with yellow pits, the tube subannular yellow-green. Capsule 3–5 lines [6–10 mm] long, subcompressed, inflated at the base, from the quantity and increasing size of the seeds finally bullate and rugose, septicidally two-valved at the top, valves entire. Seeds ellipsoid, rugose, with 6 longitudinal grooves, black."

ACKNOWLEDGMENTS

We are indebted to many friends and colleagues for help at various stages of this work: Mr. W. Barnes (Natal Parks Board), Mrs. A. Batten (East London), Mr. A. Bennell (R. B. G. Edinburgh), Mr. N. Hepper (R. B. G. Kew), Mrs. A. Hutchings (University of Transkei), Mr. G. Matthews (N. B. G. Kirstenbosch), Dr. A. Jacot Guillarmod (Grahamstown), Mr. Paul Sephton (Barkly East), Mr. J. P. Roux (Drakensberg Botanic Garden, Harrismith), Professor E. A. Schelpe (University of Cape Town), Professor S. Vogel (Johannes-Gutenberg University, Mainz). Our particular thanks are due to John Manning (University of Natal) for his splendid line drawings

and his interest in the pollination biology of these plants. We also thank the Directors and Curators of the herbaria cited, both for working facilities and the loan of specimens; the Director of Forestry, Natal Region, and his officers in the field who have been most helpful; the Director of the Natal Parks, Fish and Game Preservation Board and his officers in the field. O.M.H. acknowledges financial assistance from CSIR, Pretoria, for both field work and overseas study.

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